THE WILLIAMSPORT AREA COMMUNITY COLLEGE

CATALOG 69/70

AN INVITATION

TO MEET

OUR ADMINISTRATORS
OUR FACULTY
OUR STUDENTS
OUR GRADUATES

TO EXAMINE

THE PROGRAMS AVAILABLE FOR **YOU** IN THE
SCHOOL OF LIBERAL ARTS AND SCIENCES
SCHOOL OF APPLIED ARTS AND SCIENCES
SCHOOL OF CONTINUING EDUCATION

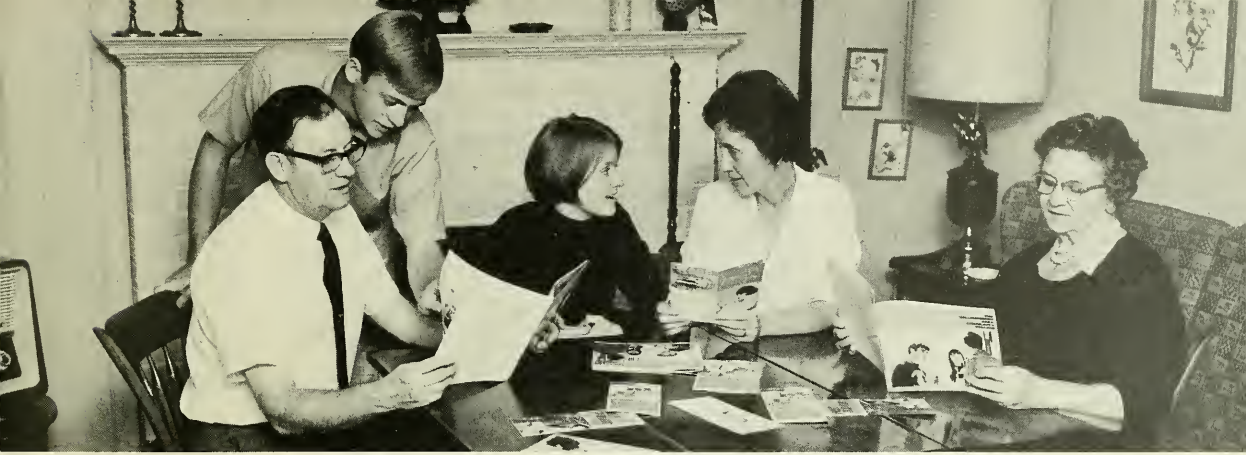
TO DISCOVER

THE TWO-YEAR COLLEGE TRANSFER PROGRAM OR
THE ONE OR TWO-YEAR CAREER PROGRAM
DESIGNED TO FIT **YOUR** ABILITIES AND NEEDS!

THE WILLIAMSPORT AREA COMMUNITY COLLEGE
1005 West Third Street, Williamsport, Pa. 17701
Phone-(717) 326-3761

Catalog Issue, Vol. 3, January 1969, No. 1

The program and requirements set forth in this publication are necessarily subject to change at any time at the discretion of the administration.



There is an educational opportunity for every member of the family at WACC!

THE WILLIAMSPORT AREA COMMUNITY COLLEGE IS FOR YOU –

If you wish to complete *the first two years of collegiate-academic credit* and transfer to a four-year institution for your Baccalaureate Degree

If you wish to complete a *one or two-year technical education program* which will prepare you for immediate entry into business or industry

If you wish to *make up educational deficiencies* in order to enroll in an academic or technical program

If you wish to enroll, day or night, to *up-grade yourself occupationally*

If you wish to enroll in individual classes or full programs for *cultural development and enjoyment*

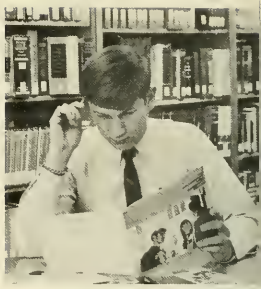
If you wish to attend a college where the *students* are of *prime importance*

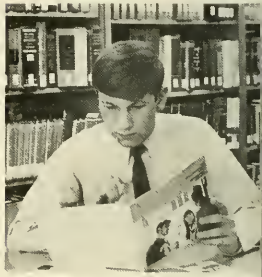
If you wish to be stimulated by great instructors, counselors, and fellow students

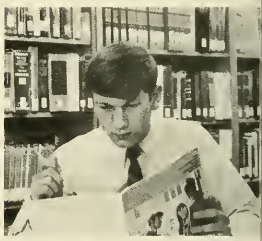
If you wish to attend two years of college at a *minimum cost*

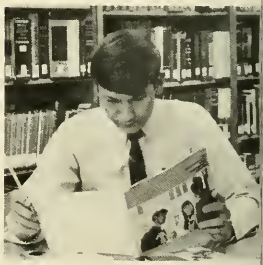
If you wish to be part of an exciting collegiate learning atmosphere!

The Williamsport Area Community College is a two-year, co-educational publicly supported institution serving the North-Central Pennsylvania Area.









ACCREDITATION

The Williamsport Area Community College holds the status of a *Recognized Candidate,* as designated by the Middle States Association of Colleges and Secondary Schools. This status is conferred upon those institutions which indicate steady and proper progress toward accreditation. Acceptance as a *Recognized Candidate* for Middle States Association accreditation attests that the Commission on Institutions of Higher Education considers an institution to be offering its students the educational opportunities implied by its objectives. In the Commission's view the institution's organization, structure and staffing are acceptable for its stage of development; its sponsors are committed to supplying its needs and are able to do so; its governing body is functioning properly; and its academic and financial plans are well designed.

HOW TO USE THIS CATALOG

Think of this catalog as a conversation with many new friends who want to help you. Read what they have to say.

5 DR. CARL ADVISES YOU ABOUT YOUR CAREER

11 DR. JONES INTRODUCES YOU TO THE COLLEGE
- Philosophy and Purpose
- Career Opportunities
- Facilities
- Students

23 DEAN SONDER ANSWERS YOUR QUESTIONS ABOUT THE SCHOOL OF LIBERAL ARTS AND SCIENCES
- Graduates
- College Transfer Programs
- Course Descriptions

61 DEAN BRESSLER ANSWERS YOUR QUESTIONS ABOUT THE SCHOOL OF APPLIED ARTS AND SCIENCES
- Applicants
- Career Programs
- Course Descriptions

215 DEAN HOMISAK ANSWERS YOUR QUESTIONS ABOUT THE SCHOOL OF CONTINUING EDUCATION
- Evening Sessions
- Summer Sessions
- Course Offerings
- Community Services

221 DEAN BERRY ANSWERS YOUR QUESTIONS ABOUT STUDENT SERVICES
- Admissions and Registration
- Counseling and Testing
- Expenses and Financial Aid
- Student Life

247 ACADEMIC REQUIREMENTS AND REGULATIONS YOU MUST FOLLOW

256 THE ACADEMIC CALENDAR TELLS YOU WHAT'S HAPPENING WHEN

258 THE DIRECTORIES LIST:
- Faculty
- Administration
- Board of Trustees

268 *REFER TO THE INDEX AT THE BACK FOR ADDITIONAL INFORMATION*

YES, THERE'S AN APPLICATION REQUEST CARD BACK THERE TOO!

DR. KENNETH E. CARL, President

PRESIDENT CARL ADVISES YOU ABOUT YOUR CAREER

The fact that you are reading this catalog means you are considering attending a two-year college. But interest is not enough to make sure your choice will be right and your college career will be effective. Statistics show that more than *half of all students who start college never complete their courses.* This high rate of failure means there is something wrong — with the student, with the choice of college, or with the program selected.

If you want to take yourself out of the half that fails and put yourself into the half that succeeds, there are practical steps you can take. Those practical steps are based on knowledge — knowledge of yourself, knowledge of the range of educational opportunities available, knowledge of the specific college which may be right for you.

Many books have been written about occupations and career choice. Today most schools provide vocational guidance and offer courses on occupations.

Although such courses and books are necessary for your training, the most valuable experience for you right now is learning to think about yourself in relation to your life work.

WHAT ARE YOU GOING TO DO WITH THE NEXT FIFTY YEARS OF YOUR LIFE?

Actually that is what the whole question of career choice means.

In fifty years or less you will be ready to retire. What are you going to do between now and then?

The question of what you will do in the next two or four or six years is not nearly so important as what you will have accomplished fifty years from now. But what you decide now and what you do in the next two or six years will determine the course of the next fifty years.

Are you going to drift into a job? Are you going to keep working at a job you're not satisfied with? This may be the most important decision of your life.

WHEN SHOULD YOU BEGIN TO CHOOSE YOUR CAREER?

Even if you are still in junior high school, you should begin to think about "the next fifty years." If you are a high school junior or senior the time is now. If you are out of school and working, it is not too late.

Of course your choice may be and should be tentative. That is, you should keep your decision subject to change. As you learn more about yourself and more about occupations, you may wish to revise or change your choice. This is desirable if you act on new and pertinent information.

Our hope is that you will have at least some general idea of your choice before you enter college. In order to make a wise choice of college and of your major program in college you need to know the general direction in which you expect to go in the next fifty years.

For those of you who are uncertain, we have a Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experience. We also have a College Skills Program which was designed to meet the needs of students who require further preparation before they can enroll in a college program.

WHAT FACTORS SHOULD INFLUENCE A CAREER CHOICE?

Obviously you should be influenced by two broad considerations: yourself and the occupation. This means that you must know yourself-physically, mentally, socially; your aptitudes, interests, and abilities.

You need to know careers. This takes time, study, and effort. But it is interesting and rewarding. You should analyze yourself in relation to many possible careers.

KNOWING YOURSELF

You can make certain broad generalizations about yourself in different areas. Some of these will overlap. In the next few years some of them will change. When you analyze your likes and dislikes, think not only of what you like now but of what you probably will like ten, twenty-five, or forty years from now.

LEARNING ABOUT CAREERS

Be alert to all the possibilities in your school and home and community to learn about different occupations and professions. Do not just assume that you will be a physician or an engineer or a lawyer and stop there. Explore a wide range of careers.

TEN SUGGESTED STEPS IN CHOOSING A CAREER

In conclusion let me suggest ten steps to help you in choosing your career or a career area.

1. Analyze yourself. What are your interests, aptitudes, abilities? Talk with your parents, teachers, and counselors. If possible, take some intelligence and aptitude tests. But remember that tests, family, and friends cannot choose your career for you. Family and friends can only make suggestions to help you understand yourself. Tests can act only as directional signs. The best analysis of yourself is by yourself.

2. Learn to be honest with yourself. Examine your weaknesses as well as your strengths. Improve your strengths and try to overcome your weaknesses. For instance, if you want to be an engineer but

have a poor record in mathematics, work harder on your mathematics. If after a sincere effort to master mathematics your record is still low, it is time to be honest with yourself and to investigate other career areas.

3. Try to decide what you want to get out of life and to contribute to life. Is it money, fame, happiness, friendship, service to your fellowmen, or something else?

4. Group into broad areas the types of careers which have interested you most as you went over these first three steps. These are the basic steps in becoming acquainted with yourself intellectually. Your self-analysis and your honesty and your interests will suggest some broad areas of activities. Write these down and think about them.

5. Read widely about these areas. A particularly interesting plan is to read biographies of men who have been successful in the career areas you are considering. You will want to read weekly and monthly magazines for new developments and announcements in these fields of endeavor. Frequently boys have kept scrapbooks or folders of clippings about particular career areas.

6. Confer with men in your community about different career areas. Such people may be friends of your family or men recommended to you by your principal and teachers or by officers of service clubs. Get first-hand information from men in the occupations or profession which you are investigating.

7. Visit the places where these occupations and professions are practiced. Your visits may take you to industries, research centers, hospitals, art museums, concert halls - any place where you can observe men working in the career areas that interest you. Examine working conditions, pay, responsibilities, recognition of effort.

8. Make a tentative choice of one of these career areas. Whether this choice is only a hypothesis or whether you think it is fairly certain, keep it subject to re-examination.

9. Assess the possibility of attaining this goal. Be honest with yourself. For instance, if you select

medicine, can you afford ten years of study after high school? If not, is your academic record strong enough to justify your asking for financial aid?

10. Start right now, today, to make yourself a worthy candidate for your career goal. Study harder, read more, make your time count. A scientist, for example, must be precise and accurate. If you are thinking in terms of a scientific area, learn to complete assignments on time. Be accurate in your school problems. (Incidentally, this is good advice for any career.)

Now is the time to study this catalog carefully to find out if WACC has a program which will fit your abilities and needs.

DR. C. HERSCHEL JONES, Vice President

DR. JONES INTRODUCES YOU TO THE COLLEGE

The Williamsport Area Community College is an open-door educational institution organized to provide the programs and courses needed by individuals in the North-Central Pennsylvania service area of the College. It serves this area in a multitude of ways by being a focal point of educational interest, a place where ideas germinate, and where a welcome sign is extended to you if you wish to learn. The Faculty, Administration, and the Board of Trustees which operate The Williamsport Area Community College work together to provide the knowledge, skills and facilities needed by students who enter a variety of business, industrial and educational fields.

To keep ahead of changing times, The Williamsport Area Community College offers more than fifty programs and other learning opportunities designed to fit your individual abilities and needs. It is one of the most comprehensive of its kind in Pennsylvania. It presently has a faculty of 204 and a full-time student body of 2200. Its student body is composed mostly of Pennsylvania residents. However, it attracts students from nearby states and foreign nations because of the variety and excellence of its programs.

In this comprehensive College, four major areas of educational opportunities are available for you:

The School of Liberal Arts and Sciences (College Transfer Programs) will provide two years of higher education for you which will lead to the Associate of Arts or Associate of Science Degree to enable you to enter a four-year college or university to earn your Baccalaureate Degree.

The School of Applied Arts and Sciences (Career Programs) will provide one or two years of specialized education for you which will lead to a Certificate or an Associate in Applied Science Degree to prepare you for immediate employment in a broad variety of occupations.

The School of Continuing Education and Community Services (Evening and Summer Sessions) will provide courses for you from the School of Liberal Arts and Sciences and the School of Applied Arts and Sciences and special programs, seminars and workshops.

The College Skills Program (Developmental) will provide courses in mathematics, written English, reading and science if you need help to make up academic deficiences in order to quality for college-level programs. These are non-credit courses.

It is the intention of the College to offer you the kind of program of education or training which you are by nature and interest best qualified to pursue. What we mean by our open-door philosophy is that we welcome you whatever your age or ability, regardless of your economic or social status. We are equally interested in you if you want to be an architect or an auto-mechanic, a sign-painter or a scientist, a plumber or a philosopher.

John W. Gardner, former Secretary of Health, Education, and Welfare, in commenting on quality and equality, sums up our philosophy.

"The society which scorns excellence in plumbing because plumbing is a humble activity and tolerates shoddiness in philosophy because it is an exalted activity will have neither good plumbing nor good philosophy. Neither its pipes nor its theories will hold water."

THE FACILITIES ARE EXPANDING!

Major expansion *in the Rishel Building provides more classrooms and expanded library facilities. Everybody "pitched in" to move over 12,000 volumes to the new library.*

Mrs. Mary Braucht, *popular housemother in the new Lycoming Hotel dormitory, wishes Hester Smith a happy time as she signs out for an evening's fun.*

Our College is presently housed in 21 buildings. We have expanded our Computer Science and Business Administration Departments and have acquired additional space for the Automotive and Sheet Metal Departments. Our library, recently relocated and enlarged, houses a rapidly growing collection of recordings and tapes, several new microfilm readers, and a copier in addition to its fine selection of books and journals. These improvements have stimulated an increased student use of its facilities. This year the College also began operation of a new audio-visual center and TV studio.

The transformation of a floor of the Lycoming Hotel into a dormitory brought about a major change in the lives of 50 women students. The cooperation among the women and their outstanding rapport with their housemother, Mrs. Mary Braucht, has made this facility a pleasant innovation. The College regrets its present inability to provide housing for men. The planned erection of dormitories for 900 students will eventually meet this great need. Also in the planning stages are a new library, a new student center, a fine arts center, new laboratories, and study and work areas for industrial, medical and food service technologies.

The ultimate goal of our planning is a completely modern and readily accessible central city campus of 100 acres, a campus that will serve approximately 5000 students by 1980 in helping provide for all people in North-Central Pennsylvania quality education in both Liberal and Applied Arts.

New Library Lounge

MEET THE STUDENTS / Their Comments Are Important!

HUNT AND THERESA BROWN

Hunt and Theresa Brown found more than an education at WACC—they found one another. Theresa, 20, and Hunt, 31 who live in Liberty, were married last fall and find no problem combining marriage and studying. "In fact," vouches Theresa, "would you believe that my average climbed from 1.5 to 3.3 since our marrage!" Hunt, Navy veteran, relates, "After wandering in and out of jobs, I soon realized that to get anywhere I would need a specialization. I worked and saved several years. Then I was accepted at a four-year college, but decided to enter WACC because of its excellent civil technology course. We are greatly satisfied with our study areas and instructors," Hunt declared. "WACC has tremendous assets in equipment and faculty." Hunt hopes to work for the government in the aerial photography field while Theresa plans to finish her liberal arts education wherever Hunt settles.

CAROL GRANTIER

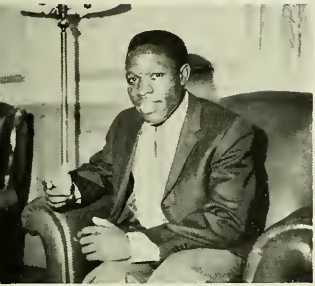
I'd recommend a two-year school to anyone," Carol Grantier enthusiastically declared. "Frankly, I couldn't get into a four-year college and my education plans were stymied until my high school guidance counselor in Canton informed me of WACC." Carol, a liberal arts degree candidate in elementary education comments, "WACC is small, thus affording many advantages for its students. Everyone, students and faculty, are willing to listen, give individual guidance, and instruction." Anxiously looking forward to next fall, Carol will enter the Capitol Campus of Penn State in Middletown with an upperclass standing.

CARY FALCK

"Welding has always fascinated me . . . I want to learn as much about it as possible . . . It's just that I've never had a great desire to be a white-collar worker." Cary Falck and his wife Kathy both attend WACC and commute daily from Lewisburg. "My father, who is a college science professor, has hoped that I would follow in his footsteps. But choosing a career is a personal decision, and Dad respected my choice. Although I am in a purely technical field, I do feel a part of an academic community - - it's simply a feeling of oneness that pervades the entire College."

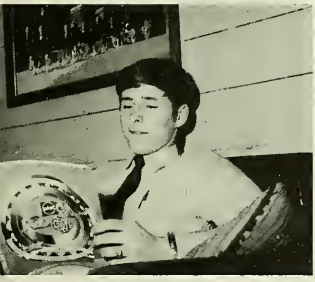
DENNIS SHATTUCK
KATHY FREDERICK

Dennis Shattuck and Kathy Frederick are planning their future together and laying their foundations with an education. Denny hails from Canton and is majoring in architecture while Kathy is from Blossburg and enrolled in the computer science sequence. Planning to marry in June, Denny hopes to continue working for the school architect until Kathy finishes school. "This is the roughest task we've ever taken upon ourselves." both Kathy and Denny agree. "The pressure to do well and get a diploma is weighing heavily on us. Sometimes the goal seems impossible, but somehow we'll meet it."



JIM PHIRI

Speaking in perfect English, Jim Phiri noted, "My training at WACC has proven to be one of the greatest experiences of my life. I have great respect for my instructors. My courses were complete and they covered every aspect of the carpentry field. I will use my training and knowledge gained at WACC to foster cultural understanding between our nations." After completing his studies, Jim plans to return to his native Malawi, Central Africa, to teach in a technical school to prepare his people for industrial progress.



JOHN SORENSON

"Believe me," John Sorenson emphatically states, "anyone not sure of college should go out and work. He'll soon discover his limitations without a degree. I decided to go to college - - no matter what!" John, who is from Rochester, N.Y., is enrolled in the tool designing sequence at WACC. "This school really has potential," John asserts. "Although some buildings are rather dated, WACC's biggest assets - its students, its faculty, and its equipment - more than adequately compensate. They soon help you to forget this temporary situation. WACC seems to function like a family. Each member helps another to build a future."

MICHELA RICCARDO

Michela Riccardo, a petite brunette from Lock Haven, speaks with pride of her professors and conveys an aura of self-confidence in knowing that she will be well-equipped to enter the secretarial field. "I've taken everything from accounting to world and business economics, from computer programming to running a Zerox, and from English to the language of shorthand. From the very beginning, I knew that I wanted to be a secretary. I didn't want to enroll in a four-year school, yet I did want a degree beyond high school. WACC was perfect for me."

SCHOOL OF LIBERAL ARTS AND SCIENCES

College Transfer Programs

PROGRAMS FOR YOU IF YOU PLAN –

To transfer to a four-year college or university.

To complete your college work with the attainment of the Associate of Arts or Associate of Science Degree.

To continue your training in an occupational field which has as a prerequisite two years of college.

TO BE ADMITTED YOU MUST –

Be a high school graduate or have successfully passed the General Educational Development (GED) Test.

Submit a transcript of your high school grades along with a recommendation from your high school principal or counselor.

Submit scores from either the American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT). You must be available for an interview with an Admissions Counselor after submitting completed credentials.

Submit a completed application with a $10.00 registration fee. This fee is not refundable.

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions Office.

COLLEGE TRANSFER PROGRAMS

When The Williamsport Area Community College came into existence in 1965, the School of Liberal Arts and Sciences was established to provide two-year College Transfer Programs for area students. In 1967, the College graduated its first class with Associate of Arts and Associate of Science Degrees from the School of Liberal Arts and Sciences.

These College Transfer Programs are meeting the needs of many capable students who desire a liberal education but cannot afford the tuition and living expenses of state-supported or private universities and colleges for more than two years. Other area residents are taking advantage of these programs to obtain two years of liberal education for personal enrichment. Many bright young people whose true potential didn't show itself in precollege years will find numerous services to unlock this potential. For some, limited academic loads may be undertaken for a semester to allow them to prove themselves. For others, enrollment in the College Skills Development Program which is offered within the College of Liberal Arts and Sciences opens the doors to further academic or technical training at the collegiate level.

Achievement reports on students who graduated in the first class indicate that most of them competed effectively with those students who had spent the freshman and sophomore years in the four-year college. In fact, their performance was superior to the national average of community college transfer students. In view of the success of our graduates, expanded facilities, and a national trend for more and more students to spend their freshman and sophomore years in two-year community colleges, the School of Liberal Arts and Sciences anticipates increased opportunities to serve tomorrow's leaders.

PURPOSE

Courses in the College Transfer Programs parallel the traditional freshman and sophomore courses offered in four-year colleges. You may complete the first two years of a four-year degree program at The Williamsport Area Community College, then transfer to a four-year college or university to work toward a bachelor's degree.

COURSE CREDIT AND DEGREES

A credit is a unit for measuring progress toward graduation. Satisfactory completion of each course earns for you a specified number of credits. You will need sixty credits, exclusive of Physical Education, to earn an Associate of Arts or an Associate of Science degree in the School of Liberal Arts and Sciences.

TRANSFER PROCEDURES

Obtain a current catalog of the four-year college to which you plan to transfer and study its entrance requirements and its suggested freshmen and sophomore programs in the major field in which you are interested.

Confer with your Williamsport Area Community College faculty advisor, immediately upon enrollment about fulfilling these requirements.

Confer, either by letter or by personal interview, with an admissions officer at the four-year college for further information about curriculum and transfer regulations.

Check carefully, two semesters before transfer, to be certain all requirements will be met and all requlations observed to the satisfaction of the four-year college.

Give careful consideration to the fact that the acceptance of credits for courses you will complete at The Williamsport Area Community College will be determined by the institution to which you plan to transfer. Courses numbered 100 or above in the College Transfer Program course listings in this catalog will generally be accepted for credit by four-year institutions.

Register for a physical education course each semester because most four-year colleges include physical education in the baccalaureate degree requirements.

Consult with your advisor if you plan to make a last-minute change in your major field of study or in your choice of a four-year college. Such changes may create problems in transferring.

DR. OTTO L. SONDER, JR., Dean of the School of Liberal Arts and Sciences

DEAN SONDER ANSWERS THREE IMPORTANT QUESTIONS ABOUT THE SCHOOL OF LIBERAL ARTS AND SCIENCES:

"WHAT IS THE PURPOSE OF A LIBERAL ARTS EDUCATION?"

A Liberal Arts education is a "liberating experience"—hence the term "liberal arts." The liberal education comes through a study of man's culture, his history, his arts and sciences. You will absorb new knowledge of old truths, assimilated and related anew to changed times. And, above all, your liberated mind will understand more fully that today's daring innovations are tomorrow's habits.

Of course, you realize that four years of liberal education is essential if you have as your goal a career in the professions, education, law, medicine, or business, or something else. You've been told over and over again that higher education leads to better jobs and more pay.

But, far more important, a liberal education will help you to see life more clearly, both on campus and off. It will help you to relate your current experience with the wisdom of the past, enriching both. You will learn how to communicate with others and how to contribute to a more harmonious and just society.

"WHAT SCHOOLS WILL ACCEPT STUDENTS FROM THE COMMUNITY COLLEGE?"

If your grades, motivation, and general college performance are good, you will have no difficulty transferring to an accredited four-year college. In fact, many of our recent graduates have gone to state colleges like Lock Haven, Mansfield, Bloomsburg, Clarion, and Millersville. Others have transferred to such schools as Cornell University, The University of Maryland, Lycoming College, Brigham Young University, The University of West Indies, PMC Colleges, and the largest single number have transferred to the Pennsylvania State University.

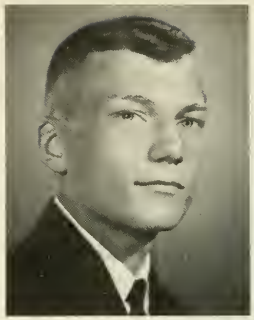
"HOW WELL DO TRANSFER STUDENTS FROM THIS SCHOOL SUCCEED AT OTHER COLLEGES?"

"How well do transfer students from this school succeed at other colleges?"

I know that this is one question uppermost in your minds.

I'd like you to meet several of our graduates. They'll tell you in their own words how WACC prepared them for the colleges to which they transferred.

Tom Zimmerman, a member of the class of '67, is now attending Lycoming College. Here is what Tom says about WACC:



"Now that I have graduated from WACC, I look back on my experience there as having been fulfilling in two important ways: first, I got enough credits with an average high enough to transfer to Lycoming College; second, I managed to save enough money, through low tuition rates at WACC and classroom hours conducive to part-time work to see my way comfortably through one year at Lycoming. Once I've finished at Lycoming, I hope to go on to graduate school and get a Ph.D. in clinical psychology.

"My teachers at WACC gave me the confidence to set my career goals. This confidence is not only the product of fine teaching but of an avid personal interest in the student as well. It is my feeling that the individual attention from the instructors at WACC is definitely the school's strongest feature. This feature challenges the larger institutions where the student is just a number. I think this hinders the discovery and expansion of the student's skills and talents."

Connie Beinlich, now a business major at Bloomsburg State College, says this about WACC:

"Being the oldest of nine children, I was naturally the first to choose a college. I chose WACC because it was the community college which my district sponsored and because it offered a liberal arts course.

"My classes were small—from 18 to 20 students—and this made a friendly casual relationship between student and professor. All the professors I had were very good and I feel I got a good, well-rounded education.

"After attending WACC, I transferred to Bloomsburg State College. Now a business major, I am doing well. I've had no trouble maintaining a "B" average.

"Although many start at a four-year college, I'm glad I started at the community college. I think that after my experiences at WACC I was better prepared to continue my education in a four-year college."

John Kaiser, a twenty-four year old veteran, graduated from WACC in 1967. He is now a senior in Electrical Engineering at Penn State. John's remarks about WACC might interest you.

"I wanted to go to college right from the time I returned from the service, but I hadn't the finances. WACC seemed to be the answer to my problem. I could go full time for the amount it would cost to go part time at a private college. By going to WACC in the evenings I was able to work in the daytime.

"I started at WACC in September, 1965 and immediately liked it, for everyone seemed to be concerned with getting an education. The professor-student relationship seemed more informal than at most schools. They were really co-operative and helpful.

"I transferred to Penn State University and found that my background was extremely good, and I have had no trouble at all. In fact, I know it was easier for me due to the tremendous individual help I received at WACC. I am now carrying a 3.0 average and expect to graduate in March of 1969.

"I must say that I will always be indebted to WACC and to all the very fine people I met there.

"I can never stop praising WACC."

WHERE TO FIND –

SCHOOL OF LIBERAL ARTS AND SCIENCES / College Transfer Programs (Curricula) ... 27-35

LIBERAL STUDIES—Associate of Arts Degree 27
MATHEMATICS - SCIENCE—Associate of Science Degree 29
ENGINEERING—Associate of Science Degree 31
EDUCATION - SOCIAL WORK—Associate of Science Degree 33
BUSINESS ADMINISTRATION—Associate of Science Degree 35

SCHOOL OF LIBERAL ARTS AND SCIENCES / Course Descriptions 37-52

Art 37
Biology 38
Business Administration 39
Chemistry 39-40
Economics 40
Education 40
Engineering 41
English and Speech 42
French 43
Geography 43
Geology 44
German 45
Government 45
History 46
Mathematics 46-48
Music 48
Philosophy 49
Physical Education 49-50
Physics 50
Psychology 51
Sociology 51
Spanish 52

SCHOOL OF LIBERAL ARTS AND SCIENCES / College Skills Program 54-55

The Oxford Companion to English Literature
GRANGER'S INDEX TO POETRY

LIBERAL STUDIES

College Transfer Program

Associate Degree / Two Years

The Liberal Studies Program offers you the first two years of a four-year program leading to a Bachelor of Arts Degree. This curriculum provides you with a broad base for further education and professional development in many career fields. Your explorations in English, foreign languages, mathematics, science, and the social sciences will help you discover your greatest interests and will have significant value in your vocation. Industry and business, professional schools, and government agencies are increasingly emphasizing the importance of a broad base of liberal arts subjects as the best preparation an undergraduate student can have.

FIRST SEMESTER

Course	*Credits*
English 101 - English Composition	3
History 101 - World History	3
*Foreign Language	3-4
**Laboratory Science	3-4
***Elective	3
Physical Education 101	1
	16-18

SECOND SEMESTER

Course	*Credits*
English 102 - English Composition	3
History 102 - World History	3
*Foreign Language	3-4
**Laboratory Science	3-4
***Elective	3
Physical Education 102	1
	16-18

THIRD SEMESTER

Course	*Credits*
English 201 - History of English Literature	3
History 201 - History of the United States	3
*Foreign Language	3-4
****Mathematics	3
***Elective	3
Physical Education 103	1
	16-17

FOURTH SEMESTER

Course	*Credits*
English 202 - History of English Literature	3
History 202 - History of the United States	3
*Foreign Language	3-4
****Mathematics	3
***Elective	3
Physical Education 104	1
	16-17

*Required: Two years of a Foreign Language (French, German, or Spanish)-one year at intermediate level will suffice.

**Required: One year of Laboratory Science (Biology, Chemistry, Geology, or Physics).

***Suggested Electives: Social Sciences (Economics, Government, Psychology, or Sociology), Geography, and Philosophy.

****Required: One year of Mathematics above Mathematics 100.

Recommended High School Program — College Preparatory.

MATHEMATICS-SCIENCE

College Transfer Program

Associate Degree / Two Years

The Mathematics-Science curriculum offers the first two years of a four-year program leading to a baccalaureate degree with concentration in either mathematics or science. This program will prepare you for advanced study in the fields of science or mathematics, whether it be for entry into industry, teaching, medicine, dentistry or related fields. There is an increasing demand for well-trained mathematicians in the computer field and the need for teachers of mathematics or science at all levels is critical. All students, whether concentrating in specific areas of mathematics or science, normally take similar courses of study the first two years and specialize during their junior and senior years.

FIRST SEMESTER

Course	*Credits*
English 101 - English Composition	3
*Laboratory Science	3-4
**Mathematics	3-4
***Electives	6
Physical Education 101	1
	16-18

SECOND SEMESTER

Course	*Credits*
English 102 - English Composition	3
*Laboratory Science	3-4
**Mathematics	3-4
***Electives	6
Physical Education 102	1
	16-18

THIRD SEMESTER

Course	*Credits*
English 201 - History of English Literature	3
*Laboratory Science	3-4
**Mathematics	3-4
***Elective	3
****Elective	3-4
Physical Education 103	1
	16-19

FOURTH SEMESTER

Course	*Credits*
English 202 - History of English Literature	3
*Laboratory Science	3-4
**Mathematics	3-4
***Elective	3
****Elective	3-4
Physical Education 104	1
	16-19

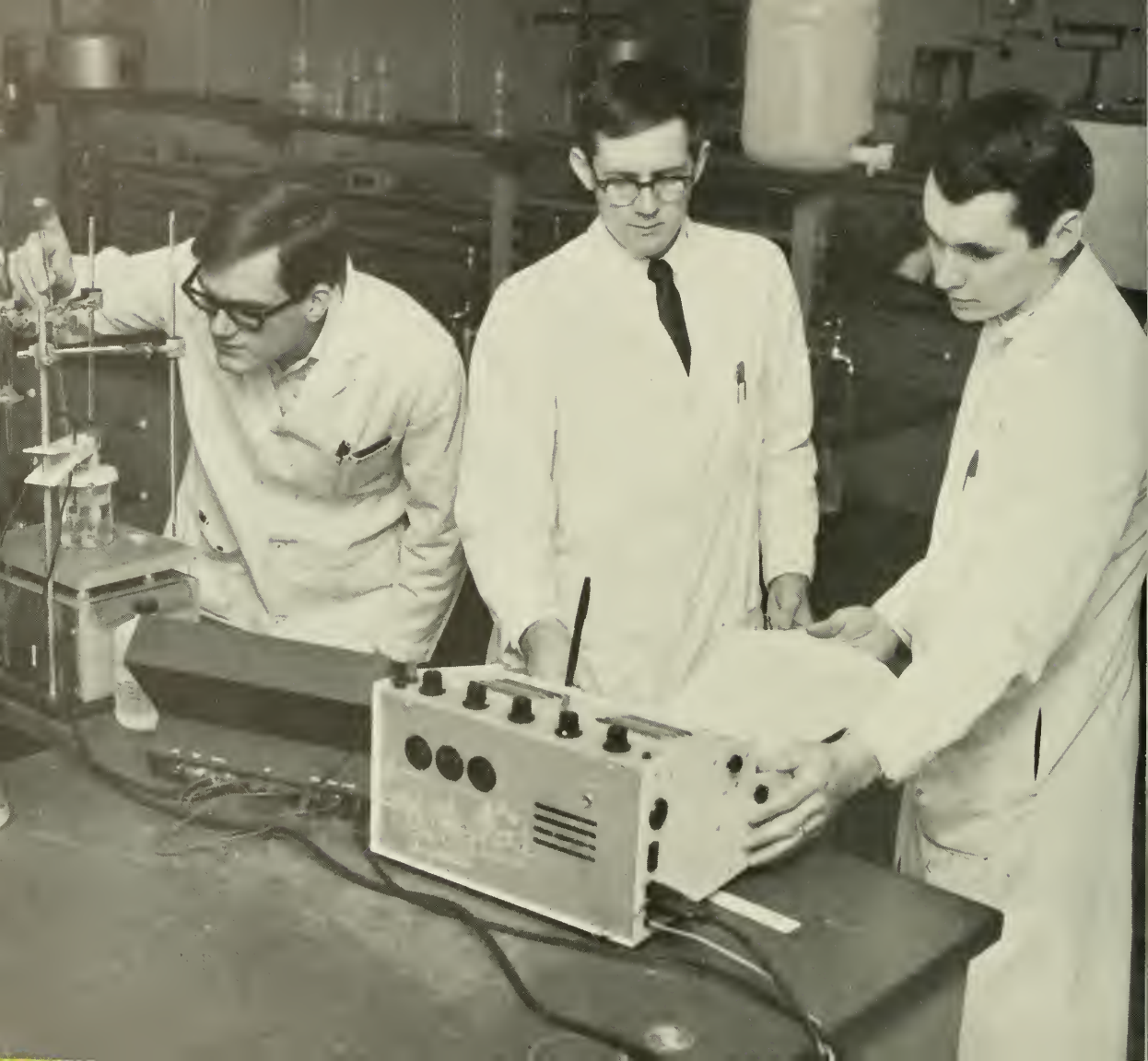
*Laboratory Sciences (Biology, Chemistry, Geology, or Physics).

**Mathematics (College Algebra, Trigonometry, Statistics, or Calculus).

***Suggested electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

****This elective includes Mathematics, Science, or Foreign Languages (French, German, or Spanish).

Recommended High School Program: College Preparatory, which includes two years of Algebra, one year of Geometry, Biology, and Chemistry.



ENGINEERING

College Transfer Program

Associate Degree / Two Years

This curriculum offers you the first two years of a program leading to a baccalaureate degree in one of the many areas of engineering practice. This program includes mathematics, chemistry, physics, English, basic engineering disciplines, and electives which will be helpful both in your career and in your social development. It is necessary for you to have a strong background in mathematics and science to follow this curriculum which is basic to many engineering fields: aeronautical, chemical, civil, electrical, industrial, sanitary, mechanical, and nuclear. It is not necessary that you choose a major area of concentration until you transfer to a four-year college.

FIRST SEMESTER

Course	*Credits*
English 101 - English Composition	3
Mathematics 105 - Calculus I and Analytic Geometry	4
Physics 105 - General Physics	4
*Electives	6
Physical Education 101	1
	18

SECOND SEMESTER

Course	*Credits*
English 102 - English Composition	3
Mathematics 106 - Calculus II and Analytic Geometry	4
Physics 106 - General Physics	3
Engineering 100 - Graphics	3
*Elective	3
Physical Education 102	1
	17

THIRD SEMESTER

Course	*Credits*
Mathematics 205 - Calculus III and Analytic Geometry	4
Chemistry 103 - Advanced General Chemistry	4
**Engineering 200 - Statics	3
Engineering 250 - Computers and Engineering Analysis	3
*Elective	3
Physical Education 103	1
	18

FOURTH SEMESTER

Course	*Credits*
Mathematics 215 - Differential Equations	3
Chemistry 104 - Advanced General Chemistry	4
**Engineering 210 - Dynamics	3
**Engineering 220 - Strength of Materials	3
**Engineering Electives	3
Physical Education 104	1
	17

*Suggested Electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

**Second-year Engineering courses are not available for the academic year 1968-69. These courses will be available when engineering enrollment increases.

Recommended High School Program: College Preparatory, which includes Algebra, Geometry, Trigonometry, Chemistry, Physics, and advanced Mathematics.

EDUCATION-SOCIAL WORK

College Transfer Program

Associate Degree / Two Years

This curriculum offers you the first two years of a four-year program leading to a baccalaureate degree with concentration in either Education or Social Work. In the four-year college to which you transfer, you may specialize in elementary or secondary teaching, school administration, guidance and counseling, and various areas of social work or related fields.

FIRST SEMESTER

Course	*Credits*
English 101 - English Composition	3
History 201 - History of the United States	3
*Mathematics 100 - Fundamentals of Mathematics	3
Psychology 101 - General Psychology	3
**Elective	3
Physical Education 101	1
	16

SECOND SEMESTER

Course	*Credits*
English 102 - English Composition	3
History 202 - History of the United States	3
*Mathematics 200 - Fundamentals of Mathematics	3
Sociology 101	3
**Elective	3
Physical Education 102	1
	16

THIRD SEMESTER

Course	*Credits*
English 201 - History of English Literature	3
***Laboratory Science	3-4
Education 201 - Introduction to Education	3
Mathematics 203 - Elementary Statistics	3
****Elective in a Social Science	3
Physical Education 103	1
	16-17

FOURTH SEMESTER

Course	*Credits*
English 202 - History of English Literature	3
***Laboratory Science	3-4
Psychology 202 - Educational Psychology	3
****Electives in Social Science	6
Physical Education 104	1
	16-17

*If qualified, you may take more advanced Mathematics courses, in lieu of Mathematics 100.

**Suggested electives: Geography or Philosophy.

***Laboratory Sciences (Biology, Chemistry, Geology, or Physics).

****Sociology courses are suggested to provide for the Social Work objectives. For Education students, other available Social Sciences are Economics or Government and, in addition, for the third and fourth semesters, History and Psychology. For Education students wishing to teach foreign languages, French, German, or Spanish may be elected.

Recommended High School Program: College Preparatory.

BUSINESS ADMINISTRATION

College Transfer Program

Associate Degree / Two Years

The Business Administration curriculum offers you the first two years of a four-year program leading to a baccalaureate degree in Business Administration. This basic curriculum is designed to give you an educational foundation that will allow you to perform and grow in the dynamic and complex field of business. Specialized business oriented courses and a significant number of liberal arts courses provide the necessary background for future study in business administration at a four-year college. Possible major fields open to you after transfer include accounting, economics, finance, foreign commerce, economic geography, industrial management, personnel management, insurance, marketing and real estate.

FIRST SEMESTER

Course	*Credits*
English 101 - English Composition	3
History 201 - History of the United States	3
*Mathematics or **Laboratory Science	3-4
Economics 201 - Introduction and Analysis - Macro	3
***Elective	3
Physical Education 101	1
	16-17

SECOND SEMESTER

Course	*Credits*
English 102 - English Composition	3
History 202 - History of the United States	3
*Mathematics or **Laboratory Science	3-4
Economics 202 - Problems and Analysis - Micro	3
***Elective	3
Physical Education 102	1
	16-17

THIRD SEMESTER

Course	*Credits*
English 201 - History of English Literature	3
Mathematics 201 - Statistical Analysis	3
Business Administration 250 - Business Law I	3
Business Administration 205 - Automatic Data Processing	3-4
Accounting 201 - Principles of Accounting	3
Physical Education 103	1
	16-17

FOURTH SEMESTER

Course	*Credits*
English 202 - History of English Literature	3
Business Administration 251 - Business Law II	3
***Electives	6
Accounting 202 - Principles of Accounting	3
Physical Education 104	1
	16

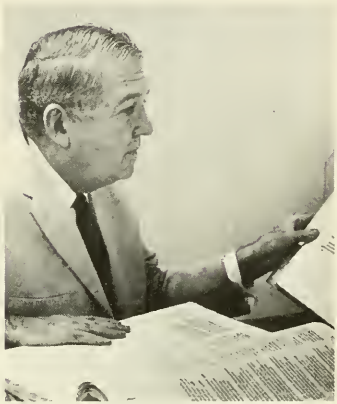
*You should consult with the Chairman of the Mathematics Department to determine the appropriate course in which to enroll. If your mathematics background is determined to be strong, you may select the Laboratory Science option.

**Laboratory Sciences (Biology, Chemistry, Geology, or Physics).

***Suggested Electives: Social Sciences (Economics, Government, History, Psychology, or Sociology), Geography, and Philosophy.

Recommended High School Program: College Preparatory.

SCHOOL OF LIBERAL ARTS AND SCIENCES / Chairmen



BIOLOGY, CHEMISTRY, AND PHYSICS
RONALD E. THOMPSON, Chairman

ENGLISH, SPEECH, AND DRAMA
HUGH M. MACMULLAN, Chairman

FRENCH, GERMAN, AND SPANISH
FREDERICK B. SHARAR, Chairman

GEOLOGY AND GEOGRAPHY
RALPH L. BOYERS, Chairman

MATHEMATICS
C. WILLIAM MORRIS, Chairman

PHYSICAL EDUCATION
THOMAS E. VARGO, Chairman and Director of Atheletics

SOCIOLOGY, PSYCHOLOGY, HISTORY, GOVERNMENT, AND ECONOMICS
PAUL FENG, Chairman

NUMBERING SYSTEM - Courses numbered in the 100 series are generally taken in your first year; in the 200 series, your second year.

"I" indicates the first semester; "II" the second semester. The number after the semicolon shows the number of credits you will receive for each course. The first number in the parenthesis indicates the number of hours you will spend in class each week; the second number applies to the number of hours in each week devoted to work in the laboratory, field trips, etc.

Example: Art History 101 - Appreciation and Aesthetics I;3 or II;3 (3-0)

The courses offered in the College Transfer Programs are arranged alphabetically by subject areas, and the descriptions include prerequisites.

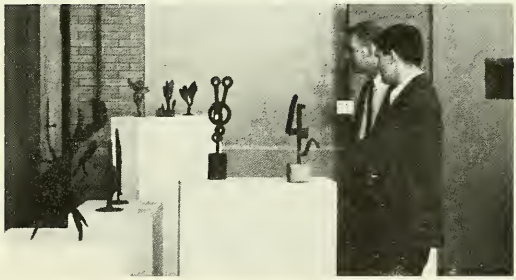
COURSE DESCRIPTIONS / *college transfer programs*

ART

The art study program is designed to develop your appreciation of works of art as a lasting enrichment to your life. Through such study you will experience the fine arts as a means of creative expression, you will better understand how art has mirrored man throughout history, and you will gain insight into the relationship between art and your other studies. You will begin to comprehend the importance of art in everyday living and the influence of art in the development of different cultures. You will be prepared for further artistic experiences as a continuing student or as an enlightened individual.

ART 101 – APPRECIATION AND AESTHETICS

Art history in which appreciation and aesthetic judgment of historic and contemporary art forms are goals. Understanding of the fine arts through critical analysis of selected works in architecture, painting, and sculpture allied with varied philosophical, cultural, inconographic, technical, ano visual approaches. Particular emphasis given to historical, sociological, and formal approaches to the arts. I;3 or II;3 (3-0).



BIOLOGY

Biology expresses the unity of the living world and man's place in it. The excitement and intellectual appeal of this science are represented by the deciphering of the genetic "code," the penetration into the unknown of the ocean, and the emergence of the orderly pattern of form, function, and behavior of organisms.

Courses in this department have been designed to meet a variety of vocational as well as intellectual objectives. They will provide you with the necessary scientific foundation if you are interested in such varied fields as laboratory technology, pharmaceutical sales, teaching, technical writing or editing, human or veterinary medicine, dentistry, biological or medical research, genetics, marine biology, physiology or molecular biology, medical illustration, technical librarianship, or nursing. Even if your major interest lies outside biology, these courses will have lasting cultural value.

BIOLOGY 100 — INTRODUCTION TO MODERN COLLEGE BIOLOGY

One-semester course to prepare students having weak science backgrounds for freshman biology. May also be elected by those interested in increasing awareness of topics in modern biology. Summer; No Credit.

BIOLOGY 101 AND 102 — GENERAL BIOLOGY

Fundamental processes of living organisms. Main concepts of biology are developed in logical sequence beginning with considerations of the chemical basis of life. Structure, functions, interrelationships, and evolution of organisms.
I;4 and II;4 (3-3).
Prerequisite: For Biology 102, Biology 101 or permission of the instructor.

BIOLOGY 201 — MICROBIOLOGY

Biology of microoganisms including bacteria, rickettsiae, viruses, fungi, protozoa, and helminths. Relationships between microorganisms and higher forms of life. I;4 (3-3).
Prerequisites: Biology 101 and 102.

BIOLOGY 202 — INVERTEBRATE ZOOLOGY

Morphology, taxonomy, physiology, and life histories of invertebrates. II;4 (3-3).
Prerequisites: Biology 101 and 102.

BIOLOGY 203 — GENERAL BOTANY

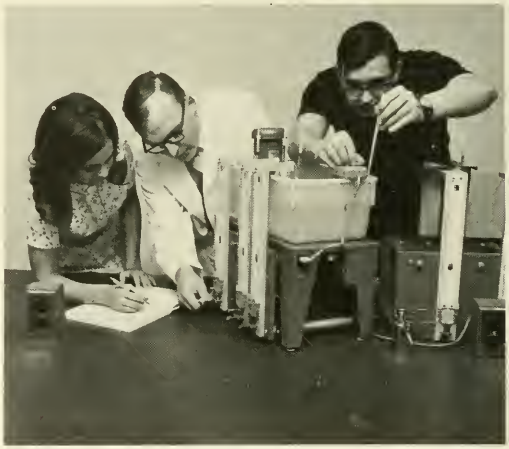
Introduction to plants, plant physiology, plant life cycles, and plant taxonomy. II;4 (3-3).
Prerequisites: Biology 101 and 102.

BIOLOGY 204 — AQUATIC BIOLOGY

Basic characteristics and relationships of aquatic organisms and environment. II;4 or Summer; 4 (3-3).
Prerequisites; Biology 101 and 102 and Chemistry 101 and 102.

BIOLOGY 290 — SPECIAL STUDIES IN BIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 or 3 or II;1 to 3.



BUSINESS ADMINISTRATION

Two semesters of both accounting and business law will give you a firm background for your understanding of further specialized courses in a business curriculum. Your practice with data processing equipment will add valuable experience to your classroom work and will provide you with a balance between theory and experience which will play an integral part in your total education. A major aim of these courses is to provide you with an understanding of the complex relationships existing within business organizations.

BUSINESS ADMINISTRATION 201 AND 202 – PRINCIPLES OF ACCOUNTING

Fundamental theory. Current concepts and standards of recording, classifying, summarizing and interpreting business activity through accounting. Practice in analysis and interpretation of financial position of business organization. I;3 and II;3 (3-3).
Prerequisite: For Business Administration 202, Business Administration 201.

BUSINESS ADMINISTRATION 205 – AUTOMATIC DATA PROCESSING

Introduction to automatic data processing: Concepts and operation of unit record equipment; basic computer systems and programming; data files and case studies application. I;3 (3-1).

BUSINESS ADMINISTRATION 250 – BUSINESS LAW

Survey of English and American business law, with special attention to contracts and including an introduction to property, crimes, and torts. I;3 (3-0).

BUSINESS ADMINISTRATION 251 – BUSINESS LAW

Laws pertaining to real and personal property, landlord and tenant, sales of goods, and negotiable instruments. II;3 (3-0).

CHEMISTRY

Chemistry is the study of matter and energy and the changes that matter undergoes. A knowledge of the material world around you is important no matter what your major is. An understanding of chemistry is essential for careers in the areas of medicine, biology, engineering, home economics, geology, meteorology, and astronomy and is useful for careers in such areas as industry, law, architecture, and geography.

CHEMISTRY 100 – INTRODUCTION TO CHEMISTRY

Intended for students who have not studied chemistry in high school and for those needing additional study before attempting college chemistry: Basic principles and theories. I or II; No credit.

CHEMISTRY 101 AND 102 – GENERAL CHEMISTRY

Study of fundamental laws and theories of chemistry. Topics include atomic structure, stoichiometry, bonding, oxidation-reduction reactions, physical states of matter, solutions, kinetics and equilibrium, electrochemistry, organic chemistry, and nuclear chemistry. Descriptive chemistry of selected elements included. Course is recommended for non-science majors. I;4 and II;4 (3-3).
Prerequisite: For Chemistry 102, Chemistry 101 or permission of the instructor.

CHEMISTRY 103 AND 104 – ADVANCED GENERAL CHEMISTRY

Study of fundamental concepts of chemistry. Topics listed under Chemistry 101 and 102 covered in more depth and more rigorously. Additional topics include introductory thermodynamics and molecular orbital theory. Course is recommended for all science majors. I;4 and II;4 (3-3).
Prerequisite: One year of high school chemistry or permission of the instructor.

CHEMISTRY 201 – QUANTITATIVE ANALYSIS

Theory and practice of classical methods of gravimetric and volumetric analysis. Some instrumentation employed. Emphasis upon accurate lab work and problem solving. I;4 (2-6).
Prerequisites: One year of general college chemistry or one semester of college chemistry and permission of the instructor.

CHEMISTRY 203 AND 204 – ORGANIC CHEMISTRY

Principal classes of organic compounds and reactions, with emphasis on structure, reactivity, and reaction mechanisms. I;4 and II;4 (3-0).
Prerequisites: Chemistry 103 and 104. For Chemistry 204, Chemistry 203.

CHEMISTRY 205 – ADVANCED INORGANIC CHEMISTRY

Modern theories of inorganic chemistry. Introductory quantum mechanics, Lewis structures, molecular geometry, molecular orbital theory, transition metal complexes and crystal field theory, electron-deficient molecules, periodic properties of elements. II;4 (3-3).
Prerequisites: Chemistry 103 and 104 or equivalent; knowledge of elementary differential and integral calculus.

CHEMISTRY 207 AND 208 – PHYSICAL CHEMISTRY

Introductory physical chemistry. Chemical thermodynamics, kinetic theory, basic quantum mechanics, and spectroscopy. I;4 and II;4 (3-3).
Prerequisites: Chemistry 205, Physics 101 and 102, and Mathematics 105 and 106. For Chemistry 208, Chemistry 207.

CHEMISTRY 290 AND 291 – SPECIAL TOPICS IN CHEMISTRY

A flexible course designed to meet special needs or interests of chemistry students. Lectures on advanced material and/or special laboratory projects. I;2 and II;2.
Prerequisites: One year of general college chemistry and permission of the instructor.

ECONOMICS

Economics is the science that investigates the conditions and laws affecting the production, distribution, and consumption of wealth. Your understanding of economic principles can contribute to both your welfare and your nation's. You need a strong background in economics if your career lies in law, business or industry, or in the secondary teaching of social studies.

ECONOMICS 201 – INTRODUCTION AND ANALYSIS – MACRO

Consideration of the United States economy, its make-up and problems. I;3 (3-0).

ECONOMICS 202 – PROBLEMS AND ANALYSIS – MICRO

The methods of economic analysis with consideration of selected national and international economic problems. II;3 (3-0).
Prerequisite: Economics 201.

ECONOMICS 203 – INTERNATIONAL ECONOMICS

Study of current problems in international trade and finance with emphasis on the gold question and the balance of payments. I;3 (3-0).
Prerequisite: Economics 202.

ECONOMICS 204 – COMPARATIVE ECONOMICS SYSTEMS

Analysis of current economic systems, their theory and practice. II;3 (3-0).
Prerequisite: Economics 202.

ECONOMICS 205 – PERSONNEL RELATIONS

Concepts and cases dealing with human beings in industry and business. I;3 or II;3 (3-0).

EDUCATION

Courses in education are designed for students who intend to teach in public schools. These courses are basic requirements if you intend to major in education.

EDUCATION 102 – CHILDREN'S AND ADOLESCENT LITERATURE

Comprehensive survey of children's and young adults' literature. Designed to provide a basic knowledge and understanding of authors, illustrators, and literary forms as background for work in a public area. I;3 (3-0).

EDUCATION 201 – INTRODUCTION TO EDUCATION

Foundations of education: historical, economic, philosophical, and social. Their implications for present-day education. I;3 or II;3 (3-0).

ENGINEERING

Most of the following courses are basic to all types of engineering and required at The Williamsport Area Community College for all engineering students. However, courses 160, 230, and 240 are for civil, mechanical, and electrical engineering, in that order; you may elect one of these during your fourth semester.

ENGINEERING 201 – GRAPHICS

Spatial relationships of points, lines, planes and solids, with engineering applications; vectors; graphical mathematics; introduction to nomography. I;3 (2-3).
Prerequisite: One semester of Engineering Drawing.

ENGINEERING 160 – SURVEYING

Theory of plane and topographic surveying, horizontal and vertical curves, and earthwork as related to civil engineering projects. I;3 or II;3 (2-3).
Prerequisite: One semester in Engineering Drawing.

ENGINEERING 200 – STATICS

Vectoral mechanics, force systems, friction, centroids and moments of inertia. I;3 (3-0).
Prerequisite: Mathematics 205.

ENGINEERING 210 – DYNAMICS

Motion of a particle, relative motion, kinetics of translation, rotation and plane motion. II;3 (3-0).
Prerequisite: Engineering 200.

ENGINEERING 220 – STRENGTH OF MATERIALS

Axial stress and strain torsion, stresses in beams, elastic curves and deflections of beams, combined stress, columns. II;3 (3-0).
Prerequisite: Mathematics 205.

ENGINEERING 230 – THERMODYNAMICS

Basic thermodynamics concepts and definitions, first and second law of thermodynamics, properties of pure substances. I;3 or II;3 (3-0).
Prerequisites: Mathematics 205, Chemistry 101 and 102, and Physics 101 and 102.

ENGINEERING 240 – ELECTRICAL CIRCUITS

Basic electrical quantities, resistance, inductance and capacitance, including their responses to constant, sinusoidal and general driving functions, elementary network analysis. I;3 or II;3 (3-0).
Prerequisites: Physics 101 and 102, and Mathematics 205.

ENGINEERING 250 – COMPUTERS AND ENGINEERING ANALYSIS

Study of basic computer systems, structure of computer programs and numerical methods in solution of mathematical engineering and related problems. Development of computional algorithms, construction of logic charts and heuristic programming concepts. I;3 or II;3 (3-1).
Prerequisite: Mathematics 205.

ENGLISH AND SPEECH

The skills you acquire in writing and speaking will be essential to your success in further college work and chief among the talents you will use as an educated person. Survey courses in literature will bring you an understanding of the value of that art as a means of creative expression.

ENGLISH 100 – BASIC ENGLISH

Intensive review of English grammar and the basic principles of composition. I or II; No Credit.

ENGLISH 101 AND 102 – ENGLISH COMPOSITION

Basic composition involving language structure, rhetorical principles, orderly, clear writing, and readings in expository prose. Second semester includes the study of four American novels. I;3 and II;3 (3-0).
Prerequisite: For English 102, English 101.

ENGLISH 105 – SHORT STORY WRITING

Development of skills in writing imaginative prose and in presenting short stories for class criticism and review. I;3 or II;3 (3-0).

ENGLISH 201 AND 202 – HISTORY OF ENGLISH LITERATURE

The works of major English writers from Chaucer to the beginning of the Romantic Period with emphasis upon intellectual, political and literary developments. I;3 and II;3 (3-0).
Prerequisite: English 102. Second semester includes study of representative authors from Wordsworth to the present.
Prerequisite: For English 202, English 201.

ENGLISH 211 – FUNDAMENTALS OF SPEECH

Basic physiology of speech. Oral reading; composition and delivery of expository speeches for different types of audiences. I;3 or II;3 (3-0).

ENGLISH 212 – SPEECH – DEBATING

Group thinking and debate as methods of solving contemporary problems. Case histories provide materials for analysis, interpretation, and evaluation. Preparation for intercollegiate debating. I;2 or II;2 (2-0).

ENGLISH 250 AND 251 – WORLD LITERATURE

The reading of literature expressing western man's belief in the paramount importance of the individual. Second semester includes survey of representative works of continental Europe to the present. I;3 and II;3 (3-0).

ENGLISH 290 – SPECIAL STUDIES IN ENGLISH

Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

FRENCH

The object of these courses is to give you a working knowledge of the French language and to provide you with a tool for the study of higher level French courses in the college or university to which you transfer.

FRENCH 101 AND 102 — BEGINNING FRENCH

Basic grammar and language structure. Comprehension, speaking, and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0)
Prerequisite: For French 102, French 101.

FRENCH 201 AND 202 — INTERMEDIATE FRENCH

Review of grammar, with readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0)
Prerequisites: French 101 and 102. For French 202, French 201.

GEOGRAPHY

Studies in geography aim to develop your knowledge and appreciation of the physical and cultural aspects of man's habitat. Because a student does not usually achieve geographic literacy before reaching college, the college offers the following courses which include in-depth study for geography majors and prospective secondary teachers of the social sciences.

GEOGRAPHY 101 — PHYSICAL GEOGRAPHY

Introduction to topographic maps, landforms, weather elements, climates, soils, and vegetation. I;3 (3-0).

GEOGRAPHY 102 — GEOGRAPHY OF THE UNITED STATES

Systematic geographic landforms, climates, vegetation, soils, population, and economics of the United States. II;3 (3-0).
Prerequisite: Geography 101 or permission of the instructor.

GEOGRAPHY 103 — CULTURAL GEOGRAPHY

Past and present reasons for location of current cultural societies of the world. I;3 (3-0).
Prerequisite: Geography 101 or permission of the instructor.

GEOGRAPHY 104 — SOUTH AMERICA AND ITS PEOPLE

Factors influencing the localization of populace of South America. II;3 (3-0).

GEOGRAPHY 201 — POLITICAL GEOGRAPHY

Parameters that combine to determine present world political geographies. I;3 (3-0).

GEOGRAPHY 290 — SPECIAL STUDIES IN GEOGRAPHY

Special attention to particular abilities and interests of students. Individual guidance in geographic studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

GEOLOGY

Geology is the science that deals with the study of the earth as well as celestial bodies. The profession of geology, which consists of some 16 interdependent areas, is concerned with the study and interpretation of the geologic agents and physical and chemical processes that act independently and collectively to change the earth's configuration. Some major areas of current geologic research are oceanography, astrogeology, landscapes, mineral deposits, volcanoes, and glaciers.

It is the philosophy of the Department of Geology to assist the student in gaining an insight into the various geologic provinces and thus, hopefully, an acquaintance with geologic thinking. When possible, seminars replace lectures.

GEOLOGY 101 AND 102 – ELEMENTS OF GEOLOGY AND HISTORICAL GEOLOGY

Designed as a two semester course. The first semester (Geology 101) includes the basic study of igneous, metamorphic, and sedimentary rocks; geomorphology; structural geology; oceanography; glaciation; volcanoes; and groundwater. Field trips supplement classroom discussion where applicable. The accompanying laboratory sessions are designed for independent study to introduce the student to research. The second semester (Geology 102) is primarily a group field project with a secondary emphasis on seminar classroom discussions. The field work consists of the geologic interpretation of an outcrop of sedimentary rocks. I;3 (2-3) II;3 (2-3).
Prerequisite: For Geology 102, Geology 101.

GEOLOGY 103 – PENNSYLVANIA GEOLOGY

Stratigraphy, structure, and geomorphology of Pennsylvania. Practicum covers geologic and topographic maps of Pennsylvania; with field trips to compliment the classroom sessions. I;3 (3-0).
Prerequisite: Geology 101.

GEOLOGY 104 – INTRODUCTORY MINERALOGY

Basic principles of crystallography and mineralogy; crystal structure, properties, occurrences, uses, identification and classification of minerals. The laboratory sessions are continuations of the classroom sessions and consists of megascopic and microscopic mineral identification. I;3 (2-3).
Prerequisite: Chemistry 100.

GEOLOGY 202 – PRINCIPLES OF GEOMORPHOLOGY

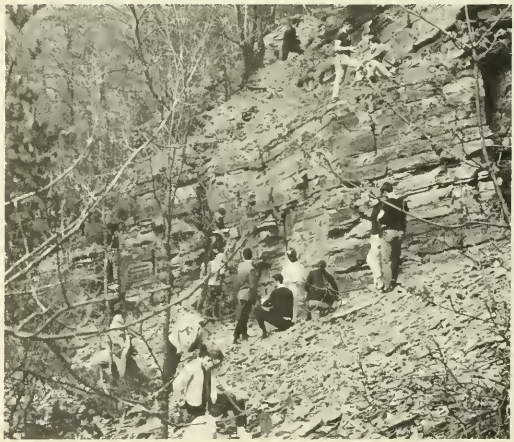
Introduction to the geomorphic interpretation of the earth's landscapes. Field trips supplement the seminars. II;3 (2-3).
Prerequisite: Geology 102 or permission of the instructor.

GEOLOGY 204 – GEOHYDROLOGY

Theory of ground water flow, distribution, and occurrence of ground water. II;3 (3-0).
Prerequisite: Geology 201, Mathematics 106, and Chemistry 102.

GEOLOGY 290 – SPECIAL STUDIES IN GEOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor.
I;1 to 4 or II;1 to 4 (Laboratory as required).



GERMAN

The courses in the German language are designed to provide a working knowledge of sufficient quality to enable you to enter higher level German courses in the college or university to which you will transfer.

GERMAN 101 AND 102 – BEGINNING GERMAN

Basic grammar and language structure. Comprehension, speaking and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0).
Prerequisite: For German 102, German 101.

GERMAN 201 AND 202 – INTERMEDIATE GERMAN

Review of grammar, with readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0).
Prerequisites: German 101 and 102. For German 202, German 201.

GOVERNMENT

The government courses are basically designed to offer you explanation and discussion of the governmental process, voting behavior, and the power structure of a society. Effort is devoted to a systematic examination of the governmental process in the United States and in other nations. These courses are not only concerned with formal governmental structure, but also with political behavior and political culture in which governmental institutions operate.

GOVERNMENT 201 – AMERICAN GOVERNMENT – NATIONAL

Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Our federal system as it has developed. I;3 or II;3 (3-0).

GOVERNMENT 202 – STATE AND LOCAL GOVERNMENT

State and local governmental institutions, their functions and responsibilities; intergovernmental relations. I;3 or II;3 (3-0).

GOVERNMENT 205 AND 206 – COMPARATIVE GOVERNMENT

Political systems of Great Britain, France, the Soviet Union, and Germany; constitutions, parties, electoral methods, legislatures, executive, and judicial systems. Theory and practice of Democracy and Totalitarianism. Social-economic forces and political systems. I;3 and II;3 (3-0).

GOVERNMENT 290 – SPECIAL STUDIES IN GOVERNMENT

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

HISTORY

The history curriculum provides you, by means of a systematic approach to historical data, an expanding reference to examination and appreciation of the cultural traditions of the past. The establishment of critical standards for the evaluation and comprehension of the contemporary world and its problems is one of the primary goals of the department.

HISTORY 101 AND 102 – WORLD HISTORY

Survey and analysis of major intellectual and political developments of world civilization from ancient times until the 18th century. Second semester includes 18th century to present. I;3 and II;3 (3-0).

HISTORY 201 AND 202 – HISTORY OF THE UNITED STATES

Political, economic, and social development of the United States from pre-colonial times to, and including, the Civil War period. Second semester covers 1865 to present. I;3 and II;3 (3-0).

HISTORY 211 – EARLY MODERN EUROPEAN

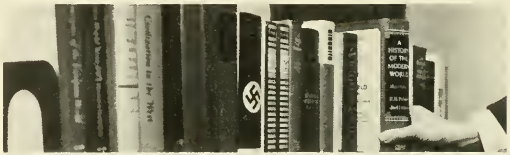
From 1500-1815. Europe's cultural, religious and economic expansion. Emergence of modern state system, international and colonial rivalry, the Enlightenment, the French Revolution, Napoleon and Congress of Vienna. I;3 or II;3 (3 0).

HISTORY 212 – TWENTIETH CENTURY EUROPEAN

Major events from the First World War to the present with emphasis on industrialization, nationalism, social upheaval, totalitarianism, anticolonialism, and war. I;3 or II;3 (3-0).

HISTORY 290 – SPECIAL STUDIES IN HISTORY

Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).



MATHEMATICS

The mathematics courses have been designed to broaden your concept of mathematics as a universal language of creative and critical thought. They have also been planned to meet your needs if you intend to teach in the public schools, to do advanced work in mathematics, or to pursue careers which will rely substantially upon mathematics.

MATHEMATICS 100 – FUNDAMENTALS OF MATHEMATICS

Fundamental properties of arithmetic, algebra, and set notation including first and second degree equations and inequations. I;3, II;3 or Summer, 3 (3-0).

MATHEMATICS 200 – FUNDAMENTALS OF MATHEMATICS

Fundamental properties of logic, probability, trigonometry, and descriptive statistics. I;3 or II;3 (3-0).
Prerequisite: Mathematics 100 or three units of high school mathematics.

MATHEMATICS 101 — COLLEGE ALGEBRA

Fundamentals of algebra; linear functions, exponents and radicals, quadratic equations, ratio and proportion, probability, mathematical induction, binomial theorem, inequalities, complex numbers, theory of equations and determinants.
I;3 or II;3 (3-0).
Prerequisite: Two units of high school mathematics.

MATHEMATICS 102 — COLLEGE TRIGONOMETRY

Trigonometric functions, use of tables, solution of right and oblique triangles, radian measure, fundamental identities, graphical representation of trigonometric functions, inverse functions and solution of equations. II;3 (3-0).
Prerequisite: Mathematics 101.

MATHEMATICS 105 — CALCULUS I AND ANALYTIC GEOMETRY

Inequalities, relations, functions, graphs, families of lines and circles, limits, continuity, derivatives of algebraic functions, related rates, maxima and minima, curve sketching differentials. I;4 (4-0).

MATHEMATICS 106 — CALCULUS II AND ANALYTIC GEOMETRY

Conics, the definite integral, transcendental functions, parametric equations, arc length, polar coordinates, vectors in the plane, formulas and methods of integration, applications. II;4 (4-0).
Prerequisite: Mathematics 105.

MATHEMATICS 201 — STATISTICAL ANALYSIS

Basic concepts of probability and introduction to statistical inference. Applications of binomial distribution, normal distribution, linear regression and correlation. II;3 (3-0).
Prerequisite: Three units of high school mathematics.

MATHEMATICS 202 — STATISTICAL ANALYSIS

Presentation of statistical techniques and physical situations to which they apply. Student's T, Chi-Square, and F tests. Linear models for experimental situations; multiple regression and correlation. I;3 (3-0).
Prerequisite: Mathematics 201.

MATHEMATICS 203 — ELEMENTARY STATISTICS

Descriptive statistics, frequency distributions, binomial and normal distributions, Central Limit Theorem, descision making tests, Chi-Square, regression and correlation.
Summer, 3 (3-0).
Prerequisite: Three units of high school mathematics or Mathematics 200.

MATHEMATICS 205 — CALCULUS III AND ANALYTIC GEOMETRY

Solid analytic geometry, vectors in three space, infinite series, partial differentiation, multiple integration, applications.
I;4 (4-0).
Prerequisite: Mathematics 106.

MATHEMATICS 210 — TOPICS IN MODERN GEOMETRY

Topics from synthetic geometry, affine and projective geometry, algebraic geometry, non-Euclidean geometry, hyperbolic plane geometry. Admission by permission of the instructor.
Summer: 3 (3-0).

MATHEMATICS 215 — DIFFERENTIAL EQUATIONS

Introductory study with applications to physics, chemistry, and engineering. II;3 (3-0).
Prerequisite: Mathematics 205.

MATHEMATICS 220 — MATRIX ALGEBRA

Matrices, determinants, inverse of a matrix, rank and equivalence, linear equations and linear dependence vector spaces, linear transformations, characteristic equation of a matrix; bilinear, quadratic, and Hermitian forms. Admission by permission of the instructor. I;3 (3-0).

MATHEMATICS 221 — INTRODUCTION TO MODERN ALGEBRA

Integers, basic properties; axiomatic approach to algebra, groups, rings, domains, ideals, fields, and modules. Admission by permission of instructor. II;3 (3-0).

MATHEMATICS 222 — INTRODUCTION TO MODERN ALGEBRA

Linear equations, vector spaces, linear transformations, polynomials, determinants, invariant direct-sum decompositions, rational and Jordan forms, inner product spaces, bilinear forms. I;3 (3-0).
Prerequisite: Mathematics 221.

MATHEMATICS 230 – PROBABILITY

Introduction to the mathematical theory of probability for the student in biological sciences, social sciences and business administration. Instruction in modern topics as part of early college mathematics. Use of mathematical models to interpret the physical phenomena and to predict the outcomes of related experiments. I;3 (3-0).
Prerequisite: Mathematics 101 or Mathematics 200.

MATHEMATICS 290 – SPECIAL STUDIES IN MATHEMATICS

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

MUSIC

If you have musical talent, WACC will arrange for private lessons for your development of that talent and give you college credits for that study. Development of creativity should be one of the goals of your education at WACC.

MUSIC 200 OR 201 – APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE

Private instruction in piano, organ, and voice. Weekly lessons. Concentration upon solid technical work and trouble shooting of specific problems. Sight reading and the exploration of new repertoire are stressed. Instruction is flexible to accommodate the requirements of the individual student at every level of accomplishment. By appointment. Special fee. I;1 or II;2 (2-0).

MUSIC 202 OR 203 – APPLIED MUSIC IN AREAS OF PIANO, ORGAN, AND VOICE

Continuation of Music 200 or 201. By appointment. Special fee. I;2 or II;2 (2-0).

MUSIC 204 OR 205 – MUSIC THEORY, SIGHT SINGING, AND COMPOSITION

Private instruction in technical areas of music theory, sight singing, and composition. By appointment. Special fee. I; 2 or II; 2 (2-0).

MUSIC 206 OR 207 – MUSIC THEORY, SIGHT SINGING, AND COMPOSITION

Continuation of Music 204 or 205. By appointment. Special fee. I;2 or II;2 (2-0).

PHILOSOPHY

Philosophy is literally the "love of wisdom" and actually the science which investigates the systems man has devised for looking at reality and human nature and conduct. The aim of philosophy courses is to aid you in forming your personal philosophy and to help you to understand the thought and behavior of others, past and present.

PHILOSOPHY 101 — INTRODUCTION TO PHILOSOPHICAL ANALYSIS

Investigation of major perennial problems in philosophy: Meaning and Truth, Perception and External world; God, Mind and Body. I;3 or II; 3 (3-0).

PHILOSOPHY 102 — ETHICS AND POLITICAL PHILOSOPHY

Status of deontological language, free will and responsibility, major issues in contemporary political philosophy. II;3 (3-0).

PHILOSOPHY 201 — SYMBOLIC LOGIC

Principles of valid deductive reasoning developed in formal manner, consistency and completeness, axiomatic structures. I;3 or II;3 (3-0).
Prerequisites: Philosophy 101, and Mathematics 100.

PHYSICAL EDUCATION

Physical Education is required of both men and women during each semester. All new students are required to submit a medical report before registering. The Physical Education or Health Education requirements may be waived if a student has been in the Service—Army, Navy, Marines, Coast Guard—for at least one year of active duty.

COURSES FOR MEN

PHYSICAL EDUCATION 101A — PHYSICAL EDUCATION

One period of swimming instruction and one period of physical activities each week including volleyball, basketball, and weight training. I;1 (2-0).

PHYSICAL EDUCATION 102A — HEALTH EDUCATION

Two periods of instruction each week including study of mental health, alcohol and alcoholism, drugs, social relationships, nutrition, and modern trends in first aid. II;1 (2-0).

PHYSICAL EDUCATION 103A — PHYSICAL EDUCATION

Two periods of physical activities each week including wrestling, gymnastics, volleyball, basketball, weight training, and conditioning exercises. I;1 (2-0).

PHYSICAL EDUCATION 104A — PHYSICAL EDUCATION

Two periods of instruction and participation in physical education each week including the life-time activities of bowling, badminton, tennis and golf. II;1 (2-0).

COURSES FOR WOMEN

PHYSICAL EDUCATION 101B – PHYSICAL EDUCATION

One period of swimming instruction and one period of physical activities each week including volleyball, basketball and modern dance. I;1 (2-0).

PHYSICAL EDUCATION 102B – HEALTH EDUCATION

Two periods of health instruction each week including study of mental health, alcohol and alcoholism, drugs, social relationships, nutrition, and modern trends in first aid. II;1 (2-0).

PHYSICAL EDUCATION 103B – PHYSICAL EDUCATION

Two periods of physical activities each week including gymnastics, volleyball, basketball, and conditioning exercises. I;1 (2-0).

PHYSICAL EDUCATION 104B – PHYSICAL EDUCATION

Two periods of instruction and participation in physical education each week including the life-time activities of bowling, badminton, tennis, and golf. II;1 (2-0).

PHYSICS

Physics is the science of inanimate matter and motion. Your study of physics will increase your understanding of the basic laws of nature as they relate to our physical environment and will create in you an appreciation of the possible extent of our knowledge of the physical world. Through your laboratory work you will become acquainted with experimental techniques and tools, and you will gain experience in interpreting and communicating experimental results.

PHYSICS 101 AND 102 – INTRODUCTORY PHYSICS

Qualitative course suitable for college students interested in physical science. Includes conventional areas of mechanics, sound and heat. Second semester covers light, electricity, electronics, atomic physics, and nuclear physics. I;4 and II;4 (3-3).
Prerequisites: For Physics 101, working knowledge of high school algebra and trigonometry. For Physics 102, Physics 101.

PHYSICS 105 AND 106 – GENERAL PHYSICS

Quantitative course in mechanics, heat and sound designed for college students in science and engineering so they may understand important principles that are the foundations of further work in science and technology. Differential and integral calculus methods are employed whenever they are more direct and natural than numerical and algebraic methods. Second semester covers optics, electricity, and magnetism. I;4 and II;4 (3-3).
Prerequisite: For Physics 106, Physics 105.
Corequisite: For Physics 105, Mathematics 105.
Corequisite: For Physics 106, Mathematics 106.

PHYSICS 210 – MECHANICS

Intermediate course in kinematics and dynamics. Differential and integral calculus are used extensively in derivations and problems. I;4 (3-3).
Prerequisites: Physics 105 and 106.
Corequisite: Mathematics 215.

PHYSICS 220 – MODERN PHYSICS

Atomic and nuclear physics including structures of atom and nucleus, radioactivity; fission and fusion; relativity; and the periodic table of elements. II;4 (3-3).
Prerequisites: Physics 105 and 106.
Corequisite: Mathematics 215.

PSYCHOLOGY

Psychology is the study of human behavior with emphasis on better understanding and prediction of human behavior. Discussion will concentrate on personality factors, theories of learning, motivation, emotion, thinking, intelligence, maturation, perception, and the application of psychological findings and methods in areas such as business and industry, medicine, mental hygiene, law, salesmanship, teaching, and vocational planning.

PSYCHOLOGY 101 – GENERAL PSYCHOLOGY

Introduction to the science of human behavior. I;3 or II;3 (3-0).

PSYCHOLOGY 202 – EDUCATIONAL PSYCHOLOGY

Psychological principles and concepts applied to learning. Individual differences, motivation and emotion. I;3 or II;3 (3-0). *Prerequisite: Psychology 101 or admission by permission of the instructor.*

PSYCHOLOGY 205 – ABNORMAL PSYCHOLOGY

Principal forms of mental and emotional disorders with emphasis upon their causes, symptoms, and course of treatment. Goal to study normal behavior by examining such behavior in distortion or in exaggeration. Admission by permission of the instructor. II;3 (3-0).

PSYCHOLOGY 210 – SOCIAL PSYCHOLOGY

Interaction of individuals in their several group relations, the contacts of harmony, and conflict within groups as well as between groups, group leadership and group controls, phenomena of imitation and suggestion. Admission by permission of the instructor. II;3 (3-0).

PSYCHOLOGY 215 – DEVELOPMENTAL PSYCHOLOGY

Psychological development and change throughout the life span, with emphasis on basic principles of child and adolescent development, genetic and environmental influences on the course of physical, motor, intellectual, emotional, social, and personality development. I;3 (3-0). *Prerequisites: Psychology 101 and 102.*

PSYCHOLOGY 290 – SPECIAL STUDIES IN PSYCHOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I;1 to 3 or II;1 to 3 (1 to 3-0).

SOCIOLOGY

Sociology is the systematic study of human inter-relationships and of the products of these relationships. It seeks to understand the operation of human societies. A background in sociology is considered to be a valuable preparation for many professional and vocational activities, including business, law, the ministry, education, and social work.

SOCIOLOGY 101 – INTRODUCTION TO SOCIOLOGY

Introduction to methods used by sociologists in studying how people live together. Dynamic relationships among society, culture and personality serve as focus for the course materials. I;3 (3-0).

SOCIOLOGY 102 – INTRODUCTION TO SOCIAL WORK

Basic concepts on social welfare programs, social case work, and field work. Especially designed for students planning a career in social work. I;3 or II;3 (3-0). *Prerequisite: Sociology 101.*

SOCIOLOGY 290 – SPECIAL STUDIES IN SOCIOLOGY

Special attention to particular abilities and interests of students. Individual guidance in advanced studies. Admission by permission of the instructor. I,1 to 3 or II;1 to 3 (1 to 3-0).

SPANISH

Courses in Spanish aim to develop the skills essential to understanding, reading and speaking the language and to provide you with the knowledge necessary to enroll in higher level courses in the college or university to which you will transfer.

SPANISH 101 AND 102 – BEGINNING SPANISH

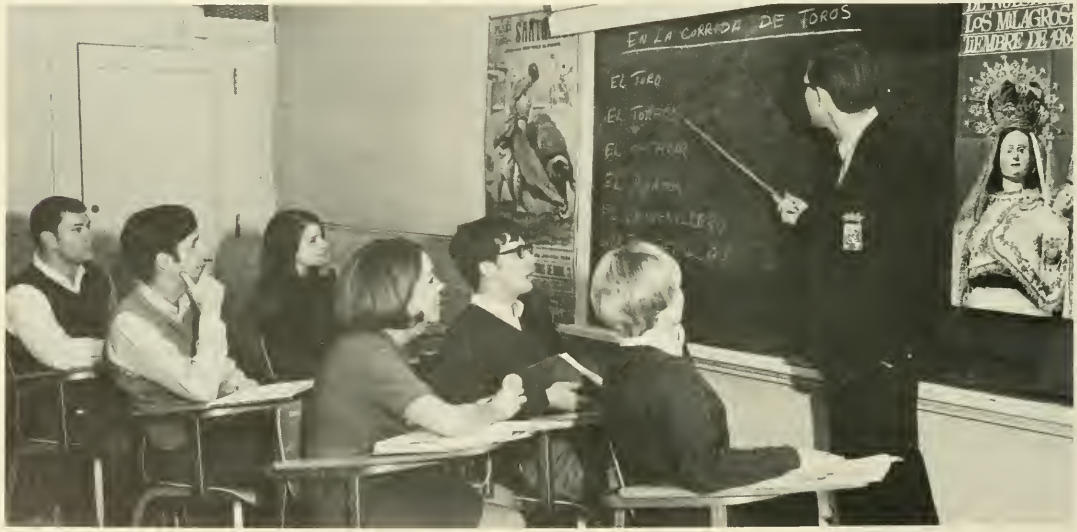
Basic grammar and language structure. Comprehension, speaking and reading, with particular regard to pronunciation and accent. I;4 and II;4 (4-0).
Prerequisite: For Spanish 102, Spanish 101.

SPANISH 201 AND 202 – INTERMEDIATE SPANISH

Review of grammar, with exercises in the Spanish subjunctive. Readings on intermediate level. Increased command of the language. I;3 and II;3 (3-0).
Prerequisites: Spanish 101 and 102. For Spanish 202, Spanish 201.

SPANISH 211 AND 212 – ADVANCED SPANISH COMPOSITION AND CONVERSATION

Particular emphasis on writing Spanish. Short selections of Spanish literature as a basis for compositions and conversations. I;3 and II;3 (3-0).
Prerequisites: Spanish 201 and 202. For Spanish 212, Spanish 211 or permission of the instructor.



COLLEGE SKILLS PROGRAM

Certificate Program / Non-Credit

IF

You haven't mastered basic study skills –
You can't express yourself effectively in oral or written communication –
You have difficulty with the new academic approaches to mathematics and science –

YOU WILL BE TAUGHT HOW TO

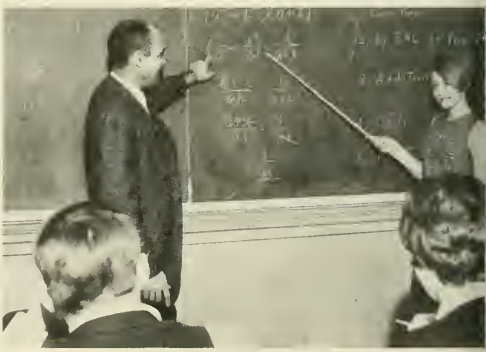
Study and use your time wisely –
Report accurately what you have read, what you have thought, and what conclusions you have drawn –
Master new approaches to mathematics and science –

HOW WILL THIS BE ACCOMPLISHED?

You will be instructed and guided according to your respective aptitudes, abilities, and interests –
You will attend small-informal classes –
You will get individual attention from a faculty interested in helping you –

WHAT'S "SPECIAL" ABOUT THIS PROGRAM?

It will prove to you that wonderful things happen when you really learn how to study –
It will make a college education possible for many of you who might otherwise have been deprived of this opportunity.



COURSE DESCRIPTIONS / *college skills program*

If you have the potential to do college-level work but have not met college entrance requirements, this Certificate Program (no credits) will help you do so by developing your skills in language, mathematics, and science through an integrated approach. If you are progressing satisfactorily at the end of one semester, you may be recommended for a degree program.

COLLEGE SKILLS – LANGUAGE I AND II

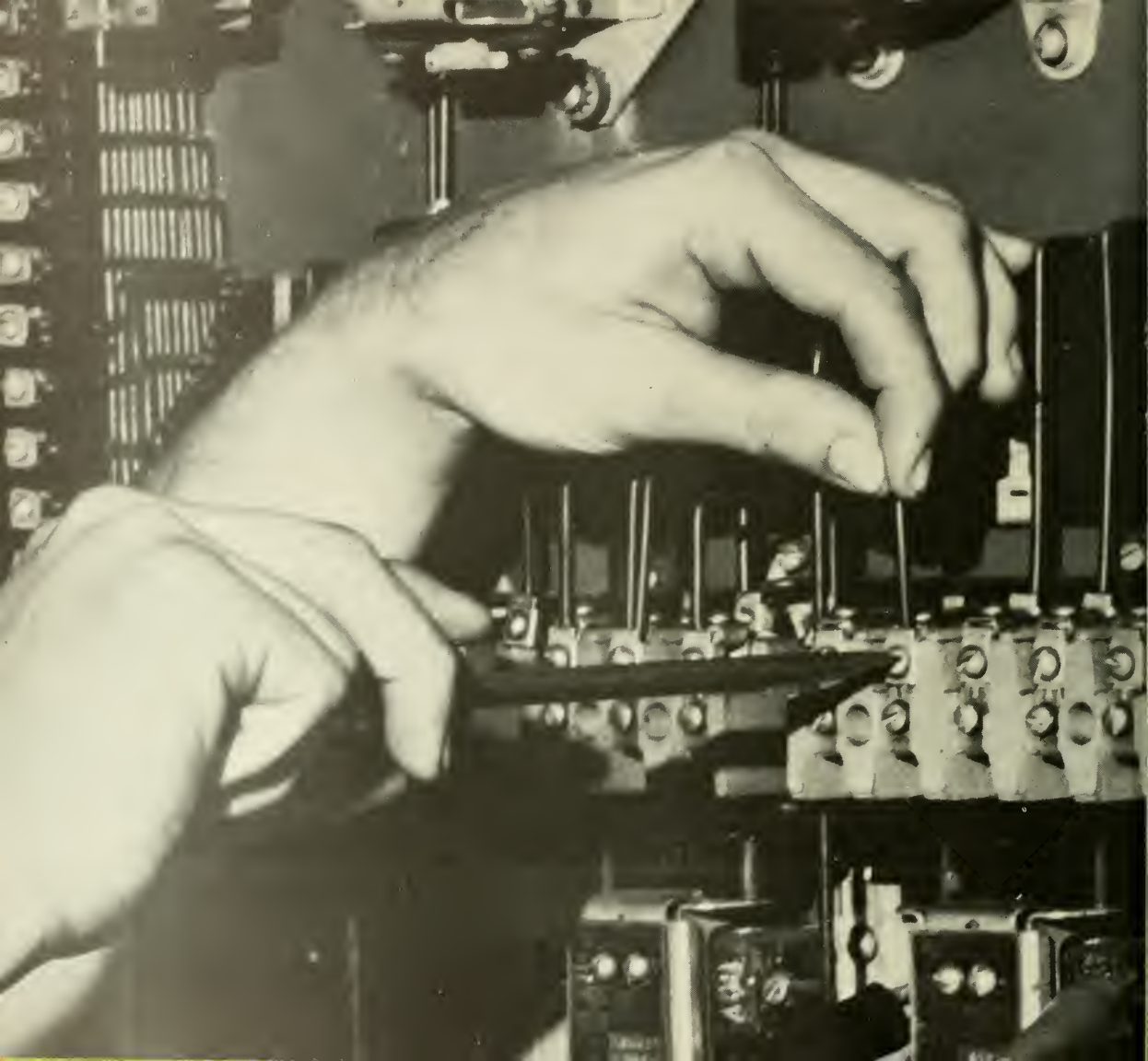
Designed to teach speaking and writing clearly, precisely, logically, and directly, and to cultivate habits of mind that produce that kind of expression. Instruction and practice in the basic elements of effective, descriptive and expository writing. To aid in preparation for college and future career opportunities. I;5 and II;5.

COLLEGE SKILLS – MATHEMATICS I AND II

Innovative course in modern mathematical methods and ideas to assist in understanding the basic properties that underlie arithmetic and algebra. Mastery of the basic concepts determine movement to advanced topics in algebra, logic, probability, geometry, and trigonometry. Preparation for effectiveness in college and careers in the field of mathematics. I;4 and II;4.

COLLEGE SKILLS – SCIENCE I AND II

Modern approach to the basic principles and concepts of natural and physical science. Discussions, lectures, revised laboratory experiments and problem-solving opportunities will insure a solid foundation for college science courses and science-related careers. I;4 and II;4.



SCHOOL OF APPLIED ARTS AND SCIENCES

Career Programs

PROGRAMS FOR YOU IF YOU PLAN –

To enroll in a one or two-year semi-professional or technical career program which will prepare you for immediate entry into business or industry.

TO BE ADMITTED YOU MUST –

Be a high school graduate or have successfully passed the General Education Development (GED) Test. (Exceptions are made in certain Certificate Programs.)

Submit a transcript of your high school grades along with a recommendation from your high school principal or counselor.

Obtain satisfactory scores on a series of entrance tests which will be administered by the College. Upon the completion of testing, a counselor will discuss your educational and vocational goals and assist you in planning an appropriate educational program. *No SAT or ACT scores are required for these programs.*

Submit a completed application with a $10.00 registration fee. This fee is not refundable.

Submit a completed Health Certificate after acceptance.

Submit the above information to the College Admissions Office.

Many Employers *come to WACC to offer our graduates jobs with excellent starting salaries, liberal insurance benefits, stock options, company financed educational programs, and unlimited advancement opportunities.*

CAREER PROGRAMS

The School of Applied Arts and Sciences of the Williamsport Area Community College was developed from the internationally famous Williamsport Technical Institute, which had its origin in 1919. From its beginning to its community college status, it has shown an adaptability to changing demands for trained manpower. The development of the present community college has been a direct result of this foresightedness and flexibility.

Recent government statistics indicate that 70% of today's 23 year-olds have had no job training and have not completed a college education. Paradoxically, nearly 80% of all jobs available in the United States require some vocational or technical skills.

The School of Applied Arts and Sciences of the College offers 52 career programs to meet the current manpower shortage in semi-professional and technical categories. It constantly studies the future as well as the present needs of business, the total society of the area, and the wider world in which its students will work and live. Then it modifies its programs to meet needs and opportunities.

AN INTERVIEW WITH DEAN BRESSLER is must reading for

High School Students • Parents • High School Teachers • High School Counselors
Junior High School Counselors • All Interested Applicants • Employers

The following interview with an applicant for the Drafting Program will answer most of your questions about the 52 Career Programs in the School of Applied Arts and Sciences.

Applicant: If I want to become a draftsman, how long do I have to go to the Community College?

Dean Bressler: Two years.

Applicant: I understand that you have two Mechanical Drafting Programs. One is an Associate Degree Program, and the other is a Certificate Program. What's the difference?

Dean Bressler: There is no time difference - they both take two years. The Associate Degree Program is stiffer. For most Associate Degree Programs you have to have had two years of high school mathematics and one year of science to qualify; and then, to continue in the program, you must take more academic subjects. This pays off in the long run because employers are willing to pay higher salaries for skilled technicians if they also have a good educational background.

Applicant: How would I know whether to take the Associate Degree Program in Engineering Drafting Technology or the Certificate Program in Mechanical Drafting?

Dean Bressler: If you have the high school requirements needed for the Associate Degree, you will be given a series of tests. The results of these tests will tell you whether you will have a better chance of success in the Certificate, or the Associate Degree Programs.

Applicant: Now, let me get it straight. If I take the Certificate Program in Mechanical Drafting, are you saying that there are no admission requirements, and that I will spend most of my time learning drafting skills and a minimum of time on academic subjects?

Dean Bressler: That's about the size of it. But, let me explain the difference. While admission to the Associate Degree Program is based upon required high school subjects and the aptitude test, admission

to a Certificate Program is determined more on general aptitude and ability for an occupational area as shown by the aptitude test, rather than by your high school background. We look at your ability and desire to learn a skill more than we do at your ability to do high-level academic work. However, in the Certificate Programs you'll have to take some work in basic English, mathematics and economics.

Applicant: Why do I have to take these subjects?

Dean Bressler: There are many reasons, but probably the most important is the fact that you are not only preparing to enter a job but also to grow as a person. Changes are rapid now both in industry and in our society. The only way that you can advance in your career and become an effective part of your community is to have a broad cultural background in social studies, humanities, and natural sciences. The broadly educated person is more valuable to his community and to his employer.

Applicant: If I complete a two-year Associate Degree Program, does that mean that I will always be a technician?

Dean Bressler: No indeed. What it really means is that you will have a marketable skill. You will be ready to take a job right after graduation at a beginning salary of approximately $5,500. Some of our graduates start at $4,000 and others start as high as $8,000. And here is something else you should know. Many industries will finance additional education for you. If you are motivated, you can eventually become a professional engineer. If this happens, "the sky is the limit" as far as earning potential and opportunities are concerned.

Applicant: My parents always wanted me to go to a four-year college and work for a Baccalaureate Degree in a professional field. I don't think I want to go to college for four years before I can earn money. Am I wrong?

Dean Bressler: No, you're not wrong. I wonder if your parents realize that there are many students just like you. I know of many who didn't want to go to four-year colleges, but they went to please their parents. They felt there was no purpose to what they were studying, and many of them never finished college. Today, they are out looking for jobs, but they can't find them because they have no skill to sell.

Applicant: Are you saying it is better to go to a two-year college and take a skills program than to go to a four year college and get a Baccalaureate Degree?

Dean Bressler: No indeed. I'm just saying that if you want to go to college for two years, then do so, and learn a skill. It's a very wise thing to do because you will be in a position to earn a good salary. It's wise, too, because technician jobs in all categories are going begging. You will have a skill to sell at the end of your two years, and you will have a good chance of getting a job in a firm that will pay for your further education.

Applicant: That makes sense.

Dean Bressler: It certainly does. Educators are just beginning to realize the importance of the technician in today's world. Industry needs an average of between five to seven technicians for every *one* professional engineer. We can't graduate students quickly enough to supply industry's demands...

Applicant: I was pretty lazy in high school and I just managed to get by. I realize I made a mistake and really think I'm ready to get down to business. Is there any way I could brush up on some subjects?

Dean Bressler: Yes, we have courses and programs available to help you make up your academic deficiencies.

Applicant: Talking about academic deficiencies reminds me that a friend asked me to find out what you could do for him.

Dean Bressler: What's his problem?

Applicant: Well, he could have worked harder in high school, too, and now that he's out, he's been drifting along and getting nowhere. He'd like to come to WACC with me, but he doesn't know what program to take. Can you help him?

Dean Bressler: Strange as it may seem, I think that I have a tailor-made solution for his problem.

Applicant: Really! What is it?

Dean Bressler: It's the Vocational Diagnostic Program, a program designed to assist students in career selection through testing, counseling, and actual job trial experiences.

Applicant: I get the general idea, but how does it work?

Dean Bressler: Let me explain. It provides extensive vocational information through a series of tours, movies, and lectures, and provides working experience through actual job trials in different vocational areas that seem most relevant to his abilities and interests. This, we feel, provides the information necessary to make the right vocational choice.

Applicant: How much time does the program take?

Dean Bressler: Exactly three weeks, and during that time he will be given information about 25 different career fields including their educational and training requirements, employment opportunities, physical demands, and the wages he can expect. He would also be in contact daily with a counselor who will assist him in his final career selection.

Applicant: I like that - especially the personal touch.

Dean Bressler: Actually, the purpose of all our Career Programs at WACC is to assist students achieve their goals. If you check the college catalog, you will find 52 career programs to meet a broad range of abilities and interests.

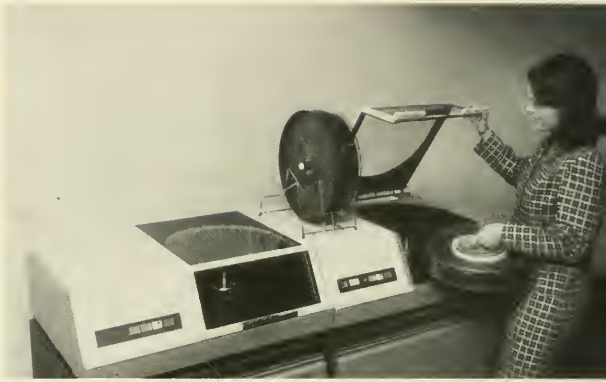
Applicant: How much will the Vocational Diagnostic Program cost him?

Dean Bressler: The tuition is $75.00. But if he is a resident of a sponsoring district, he will only have to pay $25.00 or one-third of the amount.

Applicant: The program is tailored for him. And I know a lot of other fellows who could use it, too. Thanks very much. Now, I've just one more question. Would it be possible for me to visit the College, inspect the drafting department, and talk to the instructors?

Dean Bressler: Yes indeed. You can call the chairman of the Drafting Department anytime and tell him what day you want to visit. He'll be happy to answer all your questions. I hope you will decide to come to WACC. If you do, I'm sure, in years to come, you'll agree that it was the best investment of time and effort you ever made.

RETURN BOOKS HERE



CAREERS FOR WOMEN

We invite . . .

Recent high school graduates

Housewives interested in "second careers"

To consider 52 EXCITING CAREER OPPORTUNITIES

We thought you'd like to know that . . .

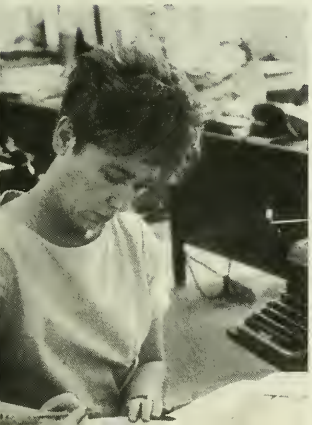
An estimated 50% of all jobs will be held by women in the next ten years.

Today, a woman can work in nearly any field she desires, if she has the ability, knowledge, and skill.

Women graduates have found successful careers in many of the Career Programs WACC offers.

WACC is constantly adding new Career Programs for women to fill critical needs in business, industry, and the health-service field.

The present ratio of men to women students at WACC is eight to one . . . but . . . it's changing with the times!



CAREER PROGRAMS

The School of Applied Arts and Sciences works closely with management representatives from business and industry as well as labor groups to develop new programs which will provide students with needed skills and area industry with trained manpower. Pictured are industry representatives who met with Dr. Carl to help develop the Forest Technology Program. Left to right are Nelson Folsom, Wood Procurement Manager, Charmin Paper Products Company (a subsidiary of Proctor and Gamble), and Edward Swisher, Wood Procurement Manager, Hammermill Paper Company, Lock Haven.

Associate Degree Career Programs

The School of Applied Arts and Sciences offers twenty-eight Associate in Applied Science Degree Programs which have been designed to prepare you for a semi-professional or technical career in business, industry, or the health-service field. These two-year Associate Degree Career Programs include technical specialty courses, allied subject matter, and special general education courses.

Associate Degree courses are not generally designed for transfer to four-year colleges or universities. However, some colleges will accept our Associate Degree credits for transfer to their four-year programs leading to a Baccalaureate Degree. More and more colleges are offering this college-transfer opportunity to our Associate Degree graduates.

Certificate Career Programs

The School of Applied Arts and Sciences offers twenty-four Certificate in Applied Science Programs designed to prepare you for entry employment in business, industry, or the health-service field. These one-and two-year Certificate Career Programs provide intensive skills training in specific occupations and emphasize functional shop-laboratory work. Related technical and special general education instruction is offered in separate supporting courses or is integrated into the occupational content of these programs.

WHERE TO FIND –

SCHOOL OF APPLIED ARTS AND SCIENCES / Associate Degree Career Programs

Page

AUTOMOTIVE DEPARTMENT 73-83
AU Automotive Technology 74
DT Diesel Technology 75

BUILDING CONSTRUCTION DEPARTMENT 87-98
CB Carpentry and Building Construction Technology 88
TW Woodworking Technology 89

BUSINESS ADMINISTRATION DEPARTMENT 99-106
BA Accounting 100
BM Business Management 101
BS Secretarial Science 102

COMPUTER SCIENCE DEPARTMENT . . . 107-112
CS Engineering Computer Science Technology 108
DP Business Computer Science Technology 109

DRAFTING DEPARTMENT 113-127
AT Architectural Technology 114
CT Civil Engineering Technology 115
ED Engineering Drafting Technology 116
TD Tool Design Technology 117
TI Technical Illustration 118

ECONOMICS DEPARTMENT 128
EC Economics 128

ELECTRICAL DEPARTMENT 129-136
EL Electrical Technology 130

ELECTRONICS DEPARTMENT 137-142
EI Electrical Instrumentation Technology 138
ET Electronics Technology 139

ENGLISH DEPARTMENT 143
TE Communications 143

Page

FOOD SERVICES TECHNOLOGY DEPARTMENT 144-147
FS Food Services Technology 145

FORESTRY DEPARTMENT 148-151
FR Forest Technology 149

INDUSTRIAL MANAGEMENT DEPARTMENT 157-161
IM Industrial Management 158

JOURNALISM & BROADCASTING DEPARTMENT 162-167
BR Broadcasting 163
JO Journalism 164

LIBRARY SCIENCE DEPARTMENT 168-171
LS Library Assistant 169

MACHINE SHOP DEPARTMENT 172-176
TT Toolmaking Technology 173

MATHEMATICS DEPARTMENT 177-178
TM Mathematics 177

OFFICE MACHINE REPAIR DEPARTMENT 179-184
OM Office Machine Technology 180

PLUMBING DEPARTMENT 188-192
PT Plumbing and Heating Technology 189

PRINTING DEPARTMENT 193-198
GA Graphic Arts Management 194

SCIENCE DEPARTMENT 199
TS Science 199

WELDING DEPARTMENT 206-211
WT Welding Technology 207

WHERE TO FIND –

SCHOOL OF APPLIED ARTS AND SCIENCES / Certificate Career Programs

		Page
AUTOMOTIVE DEPARTMENT		73-83
AB	Auto Body Repairman	76
AM	Automotive Mechanics	77
DM	Diesel Mechanics	78
SO	Service & Operation of Heavy Construction Equipment	79
AVIATION DEPARTMENT		84-86
AC	Aviation Mechanics	85
BUILDING CONSTRUCTION DEPARTMENT		87-98
BC	Bench Carpentry	90
CA	Carpentry	91
MO	Woodworking Machine Operator	93
TL	Tile Setting	92
BUSINESS ADMINISTRATION DEPARTMENT		99-106
BT	Clerk-Typist	103
DRAFTING DEPARTMENT		113-127
MD	Mechanical Drafting	119
MI	Mechanical Illustration	120
ECONOMICS DEPARTMENT		128
EC	Economics	128
ELECTRICAL DEPARTMENT		129-136
EM	Electric Motor Rewinding and Repairing	131
EW	Electrical Construction	132
ENGLISH DEPARTMENT		143
TE	Communications	143
HEALTH OCCUPATIONS DEPARTMENT		152-156
PN	Practical Nursing	153
ST	Surgical Technician	154
MACHINE SHOP DEPARTMENT		172-176
MG	Machinist-General	174
MATHEMATICS DEPARTMENT		177-178
GM	General Mathematics	177
OFFICE MACHINE REPAIR DEPARTMENT		179-184
OR	Office Machine Repairman	181
PATTERNMAKING DEPARTMENT		185-187
WP	Patternmaking-Wood	186
PLUMBING DEPARTMENT		188-192
PL	Plumbing & Heating	190
PRINTING DEPARTMENT		193-198
PG	Printing	195
SCIENCE DEPARTMENT		199
GS	General Science	199
SHEET METAL DEPARTMENT		200-202
SM	Sheet Metal	201
SIGN PAINTING DEPARTMENT		203-205
SP	Sign Painting	204
WELDING DEPARTMENT		206-211
WE	Welding	208

Career Program Course Identifications

Associate Degree and Certificate Career Programs and course descriptions in the School of Applied Arts and Sciences are alphabetically organized within department units.

Career Programs in the School of Applied Arts and Sciences are preceded by two identification letters. Example: AU AUTOMOTIVE TECHNOLOGY (Program)

Course descriptions within the programs in the School of Applied Arts and Sciences are preceded by the program identification letters and two digits. Example: AU 23 Braking Systems (Course)

Associate Degree course descriptions specify credits and clock hours per semester.

Certificate course descriptions specify clock hours per semester.

Course descriptions in the School of Liberal Arts and Sciences are preceded by subject identification and three digits. These courses are designed to be college transferrable.
Example: Government 201 - American Government-National

ELECTIVES

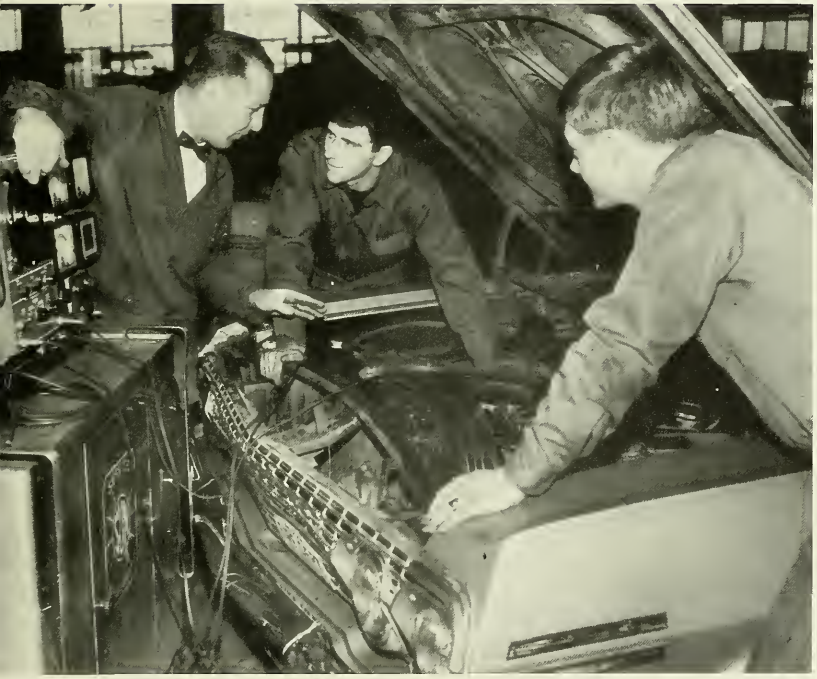
All course electives in both Associate Degree and Certificate Programs must be approved by the instructor, department chairman, and dean.

COURSE SUBSTITUTIONS

A student in Applied Arts and Sciences may take college transfer courses in the School of Liberal Arts and Sciences for his curriculum degree requirements on the recommendation of his department chairman and with the approval of the deans, when such action is determined to be in his interest and is consistent with his career goals.

AUTOMOTIVE DEPARTMENT / Career Programs

CHARLES E. WILKINSON, Chairman



Associate Degree

AU Automotive Technology
DT Diesel Technology

Certificate

AB Auto Body Repairman
AM Automotive Mechanics
DM Diesel Mechanics
SO Service & Operation of Heavy Construction Equipment

AUTOMOTIVE TECHNOLOGY (AU)

Associate Degree / Two Years

This program will give you basic and advanced practice in automotive theory. You will become skilled in the use of modern industrial tools and equipment while working on major and minor components of individual units and assemblies. Manipulative skills, semi-professional technical demands, and theory application are course specifics. You will be prepared to correct automotive mechanical problems.

Types of Jobs: Highly-skilled jobs in the automobile manufacturing industry, including testing and experimental departments, developmental laboratories; assembly and component remanufacturing; other rebuilding shops; and vehicle diagnostic centers.

Job Opportunities: Excellent with good starting salaries and unlimited advancements, including the possibility of company-financed training leading to an engineering degree.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 10	Hand & Machine Tools & Bench Work	2	0	6	96
AU 11	Engine Service I	3	2	5	112
AU 12	Power Train I	2	1	4	80
AU 14	Electrical Systems I	2	1	4	80
TE 21	Speech	3	3	0	48
TM 13	Algebra	4	4	1	80
		16	11	20	496

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 21	Engine Service II	3	2	5	112
AU 22	Power Train II	3	2	5	112
AU 23	Braking Systems	2	1	5	96
AU 24	Electrical Systems II	2	1	3	64
TM 21	Trigonometry	4	4	1	80
	Physical Education 101	1	0	2	32
		15	10	21	496

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 36	Suspension Systems I	1	1	0	16
AU 37	Body and Chassis	2	1	5	96
AU 38	Fuel Systems	2	1	4	80
WE 03	Acetylene Welding	1	0	3	48
WE 04	Electric Welding	1	0	3	48
TE 11	English Composition	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
ED 01	Mechanical Drawing	2	1	3	64
	Physical Education 102	1	0	2	32
		17	11	20	496

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 48	Selective-Control Ventilating	3	2	3	80
AU 40	Diagnosis and Tuneup	2	1	5	96
AU 41	Trouble Shooting	2	1	5	96
AU 44	Electrical Systems III	2	1	3	64
AU 46	Suspension Systems II	1	0	3	48
EC 11	Economics	3	3	0	48
TS 31	Physics-Electricity & Magnetism	4	4	0	64
		17	12	19	496

Electives: *DT 11 Engine Principles; TS 32 Physics-Heat & Light. (For students entering with advanced placement.)*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

DIESEL TECHNOLOGY (DT)

Associate Degree / Two Years

You will learn mechanical skill and trade theory application by practicing with modern industrial tools and equipment. You will also engage in testing for developing proto-type construction, etc. Knowledge of diesel-powered vehicles and mastery of mechanical specifics and repairs will enable you to assist a diesel engineer.

Types of Jobs: Highly-skilled assistant or technician in manufacturing or remanufacturing; foreman or manager of rebuilding shop or fuel injection shop; field service; customer relations man; sales; parts supply, etc.

Job Opportunities: Very good with excellent starting salaries and possibilities for job advancements and company-financed further education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 10	Hand & Machine Tools & Bench Work	2	0	6	96
DT 11	Engine Principles	2	1	4	80
DT 12	Engine Service I	2	1	5	96
DT 13	Electrical Systems I	2	1	3	64
TE 21	Speech	3	3	0	48
TM 13	Algebra	4	4	1	80
	Physical Education 101	1	0	2	32
		16	10	21	496

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
DT 22	Engine Service II	3	1	6	112
DT 23	Electrical Systems II	3	2	5	112
WE 03	Acetylene Welding	1	0	3	48
WE 04	Electric Welding	1	0	3	48
TE 11	English Composition	3	3	0	48
TM 21	Trigonometry	4	4	1	80
	Physical Education 102	1	0	2	32
		16	10	20	480

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
DT 34	Hydraulic Systems	2	1	3	64
DT 35	Fuel Systems and Controls	9	5	19	384
TS 21	Physics-Mechanics	4	4	0	64
		15	10	22	512

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AU 48	Selective-Control Ventilating	3	2	3	80
DT 46	Power Train	3	2	5	112
DT 47	Vehicle Service	3	2	5	112
ED 01	Mechanical Drawing	2	1	3	64
EC 11	Economics	3	3	0	48
TS 31	Physics-Electricity and Magnetism	4	4	0	64
		18	14	16	480

Electives: *AU 38 Fuel Systems; TS 32 Physics-Heat & Light. (For students entering with advanced placement.)*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

AUTO BODY REPAIRMAN (AB)

Certificate / Two Years

In the Auto Body Repairman Program you will master trade tools and equipment through theory and practice in sheet metal repairs, sanding, and application of fillers, prime and color coatings. Shrinking, stretching, welding, panel installation, interior trim, and glass replacement are also stressed. You will become skilled in frame and steering alignment as well as damage estimation and repair.

Types of Jobs: Shop assignments in any of the skills mentioned above.

Job Opportunities: Unlimited demand with good pay advancements. Work areas include self-employment, auto body shops, and insurance companies.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AB 10	Auto Body Repair I	5	24.5	472
EC 02	Economics	3	0	48
		8	24.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AB 20	Auto Body Repair II	5	25.5	488
	Physical Education 101	0	2	32
		5	27.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AB 30	Auto Body Repair III	5	24.5	472
	*Elective	3	0	48
		8	24.5	520

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AB 40	Auto Body Repair IV	5	24.5	472
	*Elective	3	0	48
		8	24.5	520

*Electives: *The student may elect GM 10 Arithmetic in his Third Semester and BM 47 Small Business Management in his Fourth Semester. Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.*

Recommended high school subjects: Two years of mathematics; one year of science.

AUTOMOTIVE MECHANICS (AM)

Certificate / Two Years

Manipulative skills, as practiced with modern tools and equipment, are stressed in this program in which you will learn to service and repair passenger and light commercial vehicles. You will gain proficiency in the theory and practice of power train, steering, brakes, body, ignition, carburetion, and electrical components and assemblies.

Types of Jobs: General auto mechanic in a dealership, independent garage, fleet operation, service station, etc.

Job Opportunities: Unlimited with opportunities for special ization and excellent hourly pay scales.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 10	Automotive Mechanics I	5	21.5	424
GM 10	Arithmetic	3	0	48
TE 01	Communications I or TE 11	3	0	48
		11	21.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 20	Automotive Mechanics II	5	21.5	424
GM 20	Algebra	3	0	48
TE 02	Communications II or TE 21	3	0	48
		11	21.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 30	Automotive Mechanics III	5	22.5	440
EC 02	Economics or EC 11	3	0	48
	Physical Education 101	0	2	32
		8	24.5	520

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 40	Automotive Mechanics IV	5	21.5	424
GS 20	Physical Science or TS 21	3	0	48
BM 47	Small Business Management	3	0	48
		11	21.5	520

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

DIESEL MECHANICS (DM)

Certificate / Two Years

Here is your program if you like to work with big vehicles on land and water. Using modern trade tools and equipment in the care and repair of diesel-powered vehicles, you will apply trade theories and develop manipulative skills in this field. After you have gained over-all experience, you may decide to specialize in any of the following: fuel injection service, engine repair and rebuilding, power train (except engine), brakes, steering, and chassis work.

Types of Jobs: Mechanic in any of these fields: truck dealership; independent garage; truck fleet; contractor fleet; farm or construction equipment dealerships; mining, quarrying, and waterways fleets. Also, field service representative or self employment.

Job Opportunities: Unlimited with good starting rates and rapid increases and advancements.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 10	Auto Mechanics I	5	21.5	424
GM 10	Arithmetic	3	0	48
TE 01	Communications I or TE 11	3	0	48
		11	21.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
DM 20	Diesel Mechanics I	5	21.5	424
GM 20	Algebra	3	0	48
TE 02	Communications II or TE 21	3	0	48
		11	21.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
DM 30	Diesel Mechanics II	5	22.5	440
EC 02	Economics or EC 11	3	0	48
	Physical Education 101	0	2	32
		8	24.5	520

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
DM 40	Diesel Mechanics III	5	21.5	424
GS 20	Physical Science or TS 21	3	0	48
BM 47	Small Business Management	3	0	48
		11	21.5	520

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

Certificate / Two Years

SERVICE AND OPERATION OF HEAVY CONSTRUCTION EQUIPMENT (SO)

Fundamentally a skills program, Service and Operation of Heavy Construction Equipment will prepare you to operate, service, and repair all types of construction machinery and become a specialist in one or two types. Welding and surveying basics are included in the program as well as complete coverage of mechanical safety measures.

Types of Jobs: Operation, mechanical repair, service of heavy equipment. Self-employment or work with contractors, dealers, leasors, miners, quarriers, etc.

Job Opportunities: Unlimited with top pay and advancement governed only by your own ability, interest, and ambition.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AM 10	Automotive Mechanics I	5	20.5	424
SO 10	Service and Operation I	0	3	48
EC 02	Economics or EC 11	3	0	48
		8	23.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SO 20	Service and Operation II	5	25.5	488
	Physical Education 101	0	2	32
		5	27.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SO 30	Service and Operation III	5	24.5	472
	*Elective	3	0	48
		8	24.5	520

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SO 40	Service and Operation IV	5	24.5	472
	*Elective	3	0	48
		8	24.5	520

*Electives: *The student may elect Math I in his Third Semester and Small Business Management in his Fourth Semester. Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.*

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *automotive department*

AB 10 AUTO BODY REPAIR I 472 Hrs.

Basic theory and practice in trade fundamentals; body and chassis work; sanding; masking; metal work; gas and electric welding.

AB 20 AUTO BODY REPAIR II 488 Hrs.

Continuation of AB 10; interior trim; reconditioning work; panel installation; front and rear alignment and suspension.
Prerequisite: AB 10

AB 30 AUTO BODY REPAIR III 472 Hrs.

Continuation of AB 20; filling; color matching; spray painting.
Prerequisites: AB 10, AB 20

AB 40 AUTO BODY REPAIR IV 472 Hrs.

Continuation of AB 30; electrical theory and practice; trade tool usage; damage estimation.
Prerequisites: AB 10, AB 20, AB 30

AM 10 AUTOMOTIVE MECHANICS I 424 Hrs.

Disassembly, reassembly, inspection of vehicle components; engine, transmission, brake assemblies; causes of parts failures; tools and machines.

AM 20 AUTOMOTIVE MECHANICS II 424 Hrs.

Advanced study of component breakdowns, assemblies, sub-assemblies: clutch, transmission, drive-line, axles, differentials, bearings (anti-friction); service and repair of chassis units, exhaust systems, shock absorbers; seat, window and and convertible top mechanisms.
Prerequisite: AM 10

AM 30 AUTOMOTIVE MECHANICS III 440 Hrs.

Continuation of AM 20; brake service; suspension systems; steering units; wheel balance and alignment; theory and practice in gas and electric welding.
Prerequisites: AM 10, AM 20

AM 40 AUTOMOTIVE MECHANICS IV 424 Hrs.

Review of former units; advanced theory, service, operation of electrical units; fuel system components; heating, cooling assemblies; test devices for diagnosis; trouble shooting.
Prerequisites: AM 10, AM 20, AM 30

AU 10 HAND & MACHINE TOOLS & BENCH WORK — 2 Cr. - 96 Hrs.

Use of common and special trade tools; bench and machine tools for tapping, threading, reaming, grinding, honing, lapping, measuring.

AU 11 ENGINE SERVICE I — 3 Cr. - 112 Hrs.

Nomenclature; parts relationships; servicing components; disassembly and reassembly procedures.

AU 12 POWER TRAIN I — 2 Cr. - 80 Hrs.

Trouble shooting; clutch installation and adjustment; diagnosis, repair, service of standard units, overdrive, universal joints, rear wheel bearings and seals.

AU 14 ELECTRICAL SYSTEMS I — 2 Cr. - 80 Hrs.

Service and repair of electrical components including generators, regulators, meters, batteries, ignition systems, lighting and warning devices.

AU 21 ENGINE SERVICE II — 3 Cr. - 112 Hrs.

Continuation of AU 11; engine repair and maintenance.

AU 22 POWER TRAIN II — 3 Cr. - 112 Hrs.

Continuation of AU 12.

AU 23 BRAKING SYSTEMS — 2 Cr. - 96 Hrs.

Complete modern brake servicing: lining, bleeding, adjusting; master and wheel cylinders and hydraulic component repair; power, disc, dual brake system service.

AU 24 ELECTRICAL SYSTEMS II — 2 Cr. - 64 Hrs.

Continuation of AU 14; use of modern testing and servicing equipment; circuitry and print reading; alternator and transistorized regulator service.

AU 36 SUSPENSION SYSTEMS I — 1 Cr. - 16 Hrs.

Front and rear suspension systems theory; wheel balancing; steering geometry.

AU 37 BODY AND CHASSIS — 2 Cr. - 96 Hrs.

General body and chassis repairs; servicing of power operated accessories; repair of exhaust systems; shock absorbing service.

AU 38 FUEL SYSTEMS — 2 Cr. - 80 Hrs.

Cleaning, rebuilding, adjusting carburetors; use of modern test and service equipment; testing, repairing fuel pumps, fuel system accessories; fuel injection methods.

AU 40 DIAGNOSIS AND TUNEUP — 2 Cr. - 96 Hrs.

Using modern testing equipment in setting up generators, fuel and ignition systems; diagnosing engine conditions by "reading" instruments, spark plugs.

AU 41 TROUBLE SHOOTING — 2 Cr. - 96 Hrs.

Deductive method of diagnosis for trouble in engines, chassis, other units.

AU 44 ELECTRICAL SYSTEMS III — 2 Cr. - 64 Hrs.

Continuation of AU 24; service and repair of alternators and matching types of AC regulators; solid-state ignition; instrument panel gauges.

AU 46 SUSPENSION SYSTEMS II — 1Cr. - 48 Hrs.

Continuation of AU 36; complete servicing, repair, adjustment of front and rear suspension systems; power steering services and repairs.

AU 48 SELECTIVE CONTROL VENTILATING — 3 Cr. - 80 Hrs.

Theory and practice in construction and service of passenger and commercial vehicle heating and air-conditioning units.

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

DM 20 DIESEL MECHANICS I — 424 Hrs.

Continuation of AM 10; basic theory and practice in types of diesel engines; clutches; transmissions; brakes; steering; rear axle assmeblies; electrical components; chassis and body components. Work listed here and in DM 30 and DM 40 deal with heavy duty units.

Prerequisite: AM 10

DM 30 DIESEL MECHANICS II — 440 Hrs.

Trouble shooting; service and repair of prime movers, wheeled and tracked; further study of power train; brakes; exhaust

system; vehicle controls; lighting and instrumentation; pneumatics and hydraulics theory and practical work; gas and electric welding.
Prerequisites: AM 10, DM 20

DM 40 DIESEL MECHANICS III 424 Hrs.

Fuel system assemblies, sub-assemblies, and components; fuel system controls; modern test instruments.
Prerequisites: AM 10, DM 10

DT 11 ENGINE PRINCIPLES 2 Cr. - 80 Hrs.

Fundamental knowledge of construction; nomenclature; relationships of parts; principles of engines; disassembly, inspection, reassembly; operation of engines; oiling system; piston and connecting rod repairs; valve service; valve and ignition timing.

DT 12 ENGINE SERVICE I 2 Cr. - 96 Hrs.

Disassembly; inspection of parts; repairs; tests; analysis of malfunctions; reassembly; comparison of spark-ignition and compression-ignition (heat) engines.

DT 13 ELECTRICAL SYSTEMS I 2 Cr. - 64 Hrs.

Service and repair of generators, regulators, motors, batteries, ignition systems, lighting and warning devices, other electrical components.

DT 22 ENGINE SERVICE II 3 Cr. - 112 Hrs.

Continuation of DT 12; maintenance; study of superchargers, blowers, pumps, governors, and heat exchangers; starting and stopping procedures.

DT 23 ELECTRICAL SYSTEMS II 3 Cr. - 112 Hrs.

Continuation of DT 13; use of modern testing and servicing equipment; circuitry and print reading; alternator and transistorized regulator service.

DT 34 HYDRAULIC SYSTEMS 2 Cr. - 64 Hrs.

Theory and practical work on hydraulic systems of trucks and heavy equipment; service, repair, and adjustment.

DT 35 FUEL SYSTEMS AND CONTROLS 9 Cr. - 384 Hrs.

Diesel injection, ignition, and fuel types; pump nozzle; injector; governor construction; service; repair; adjustment of fuel system components.

DT 46 POWER TRAIN 3 Cr. - 112 Hrs.

Trouble shooting; service and adjustment of clutches; theory, adjustment, and repair of transmissions; care and repair of drive line components, rear axles, bearings, and seals.

DT 47 VEHICLE SERVICE 3 Cr. - 112 Hrs.

General maintenance, service, repair and overhaul of trucks and heavy equipment as available; pre-inspection duties and services.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

SO 10 SERVICE AND OPERATION I 48 Hrs.

Theory and practice in gasoline and diesel engine servicing; major components and assemblies of vehicles; rigging, ropes, cables, and slings.
Prerequisite: AM 10

SO 20 SERVICE AND OPERATION II 488 Hrs.

Continuation of SO 10; introduction to gas and electric welding.
Prerequisites: AM 10, SO 10

SO 30 SERVICE AND OPERATION III 472 Hrs.

Engine and vehicle maintenance; lubrication theory and

practice; electrical system theory and practice; equipment operation.
Prerequisites: AM 10, SO 10, SO 20

SO 40 SERVICE AND OPERATION IV 472 Hrs.
Continuation of SO 30; practical work in operation, care, and repair of machines.
Prerequisites: AM 10, SO 20, SO 30

TE 01 COMMUNICATIONS I
For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II
For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION
For course description, see English Department, page 143.

TE 21 SPEECH
For course description, see English Department, page 143.

TM 13 ALGEBRA
For course description, see Mathematics Department, page 178.

TM 21 TRIGNOMETRY
For course description, see Mathematics Department, page 178.

TS 21 PHYSICS—MECHANICS
For course description, see Science Department, page 199.

TS 31 PHYSICS—ELECTRICITY & MAGNETISM
For course description, see Science Department, page 199.

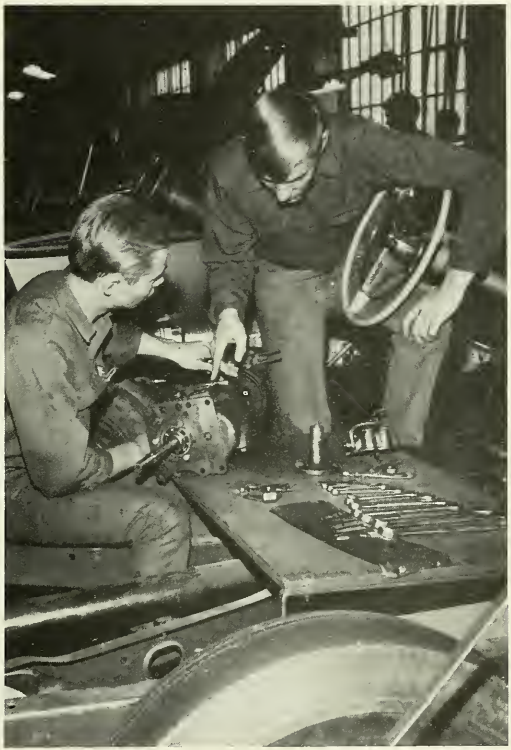
TS 32 PHYSICS—HEAT & LIGHT
For course description, see Science Department, page 199.

WE 03 ACETYLENE WELDING
For course description, see Welding Department, page 210.

WE 04 ELECTRIC WELDING
For course description, see Welding Department, page 210.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.
For course descriptions, see Physical Education Department, pages 49 and 50.



AVIATION DEPARTMENT / Career Program

C. FRANK PANNEBAKER, Chairman

Certificate

AC Aviation Mechanics

AVIATION MECHANICS (AC)

Certificate / Two Years

If you want to be an aircraft and powerplant mechanic, this is the program for you. You will receive theoretical and practical instruction in such skills as aircraft dope and fabric work, electricity, welding, hydraulics, aircraft powerplant maintenance and overhaul, carburetion, ignition systems, flight-line maintenance, trouble shooting, etc. As a graduate of this course, you will be qualified to take the Federal Aviation Agency Mechanics Examination and upon successful completion will hold an Airframe and Powerplant Mechanics Cerfificate.

Types of Jobs: Airline, fixed-base operator and manufacturer's service mechanic.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AC 10	Basic Powerplant Mechanics	0	26.5	424
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
		6	26.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AC 20	Advanced Powerplant Mechanics	0	26.5	424
TE 02	Communications II or TE 21	3	0	48
GM 20	Algebra or GM 30	3	0	48
		6	26.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AC 30	Basic Airframe Mechanics	0	26.5	424
EC 02	Economics or EC 11	3	0	48
	Physical Education 101	0	2	32
		3	28.5	504

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
AC 40	Advanced Airframe Mechanics	0	26.5	424
GS 20	Physical Science or TS 21	3	0	48
ED 01	Mechanical Drawing	0	4	64
		3	30.5	536

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *aviation department*

AC 10 BASIC POWERPLANT MECHANICS 424 Hrs.

Theory, construction, nomenclature, and operation of internal combustion engines; trade tools; theory and maintenance of fuel, electrical, lubrication, and propulsion systems.

AC 20 ADVANCED POWERPLANT MECHANICS 424 Hrs.

Overhaul, testing, installation, and operation of live engines; emphasis on weight and balance, fuel and electrical systems, and instrumentation; inspection procedures; FAA specifications.

AC 30 BASIC AIRFRAME MECHANICS 424 Hrs.

Theory of flight; aircraft control systems; basic woodworking, covering skills in finishing, sheet metal, welding, rigging, assembly.

AC 40 ADVANCED AIRFRAME MECHANICS 424 Hrs.

Continued practice in woodworking, cover, finish, structural repairs of sheet metal, welding; servicing aircraft systems; disassembly, assembly, rigging of live aircraft; return-to-service procedures.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA or GM 30

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 1 Cr. - 32 Hrs.

For course description, see Physical Education Department, pages 49 and 50.

BUILDING CONSTRUCTION DEPARTMENT / Career Programs

FRANK C. GRENOBLE, Chairman

Associate Degree

CB Carpentry and Building Construction Technology
TW Woodworking Technology

Certificate

BC Bench Carpentry
CA Carpentry
MO Woodworking Machine Operator
TL Tile Setting

CARPENTRY AND BUILDING CONSTRUCTION TECHNOLOGY (CB)

Associate Degree / Two Years

If you are interested in the technical aspects of light building construction, this is the program for you. You will be trained in the principles and techniques of light-frame carpentry and masonry. A study of tools, materials, and building equipment will be included in the program. Design, construction, cost estimation, and management will be emphasized.

Types of Jobs: Advanced apprentice positions which could lead to foreman, building technician, or superintendent.

Job Opportunities: Unlimited with excellent starting salaries.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
CB 10	Woodworking for Carpenters	4	2	6	128
CB 11	Construction Carpentry	4	2	6	128
	Physical Education 101	1	0	2	32
		16	11	15	416

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
CB 23	Block Construction	5	2	14	256
CB 24	Estimating & Blue Prints	2	2	0	32
	Physical Education 102	1	0	2	32
		15	11	17	448

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 21	Physics-Mechanics	4	4	0	64
EC 11	Economics	3	3	0	48
EL 12	Basic Wiring Lab	2	0	6	96
CB 33	Brick Construction	4	2	9	176
CB 30	Roof Framing Theory	3	3	0	48
		16	12	15	432

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 32	Physics-Heat & Light	3	3	0	48
CB 40	Advanced Carpentry	4	2	6	128
CB 42	Building Construction Tech.	6	3	9	192
CB 44	Concrete Construction	3	2	3	80
		16	10	18	448

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

WOODWORKING TECHNOLOGY (TW)

Associate Degree / Two Years

The Woodworking Technology Program will prepare you to apply basic woodworking theory to woodworking practices and will help you to understand future developments as they take place. Laboratory work with modern machines and equipment will help you to become a woodworking technician and to assist the construction engineer in the design, construction, installation and testing of woods and wood products.

Types of Jobs: Wood technician; dry kiln operator.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
TW 10	Design of Wood	2	0	6	96
TW 11	Layout and Cutting	5	0	15	240
	Physical Education 101	1	0	2	32
		15	7	24	496

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
TM 21	Trigonometry	4	4	1	80
ED 01	Mechanical Drawing	2	1	3	64
TW 20	Machine Cutting	1	0	3	48
TW 21	Wood Shop Machines	4	0	12	192
	Physical Education 102	1	0	2	32
		15	8	21	464

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
AT 25	Basic Architectural Drafting	2	0	6	96
TW 30	Wood Turning	1	0	3	48
TW 31	Fastening	2	0	6	96
TW 32	Veneer/Bending, etc.	2	0	6	96
AT 12	Structures I	2	2	0	32
		16	9	21	480

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 32	Physics-Heat & Light	3	3	0	48
TW 40	Patternmaking	1	0	3	48
TW 41	Finishing	1	0	3	48
TW 42	Blueprint Reading	2	0	6	96
TW 43	Production Jigs & Fixtures	3	0	9	144
TW 44	Knife Grinding & Layout	2	0	6	96
		12	3	27	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

BENCH CARPENTRY (BC)

Certificate / One Year

This program will train you to enter the woodworking industry as a bench carpenter or woodworker. You will be taught to assemble partially machined parts and to construct originals. You will be prepared to construct staircases, fine furniture, doors, cupboards, and special display pieces. Most of your work will be done at the bench, rather than out on a construction job.

Types of Jobs: General or custom cabinet work in a shop or factory, or industry; assembly of pre-cut wood items, architectural woodwork, lumber yard work, etc.

Job Opportunities: Unlimited with good starting salaries.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
BC 10	Safety Education	1	0	16
BC 11	Hand Tools	0	7	112
BC 12	Blueprint Reading	5	0	80
BC 13	Related Math	5	0	80
BC 14	Identification of Lumber	0	2	32
BC 15	Bench Work & Hand Operations	0	10.5	168
		11	19.5	488

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
BC 18	Portable Power Tools	0	7	112
BC 19	Production Jigs & Fixtures	0	3	48
BC 20	Assembly, Gluing & Clamping	0	9.5	152
BC 21	Stock Billing	2	0	32
BC 22	Wood Shop Machines	0	7	112
BC 23	Production Techniques	1	3	64
		3	29.5	520

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

CARPENTRY (CA)

Certificate / Two Years

This course will certify you as an apprentice carpenter or mason. You will be taught the basic skills of carpentry and masonry in the construction of light frame or masonry buildings and you will develop skill in the use of trade tools and materials. Basic courses in English, mathematics, economics and science will give you a good background for your vocation.

Types of Jobs: Apprentice carpenters or masons, with advancement possibilities for journeyman, master, or foreman; also, employment in plants or factories where building units, components, or building materials are made or sold such as brick yards, blockplants, pre-stressed concrete slab and beam plants, planing mills, pre-fabricating operations, lumber yards, etc.

Job Opportunities: Wide open with top starting salaries. Advancement is limited only by your initiative.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
CA 10	Carpentry I	0	25	400
		6	25	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TE 02	Communications II or TE 21	3	0	48
GM 20	Algebra or GM 30	3	0	48
CA 20	Masonry I	0	25	400
		6	25	496

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EC 02	Economics or EC 11	3	0	48
CA 30	Masonry II	0	26	416
	Physical Education 101	0	2	32
		3	28	496

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GS 20	Physical Science or TS 21	3	0	48
EW 12	Basic Wiring Lab	0	6	96
CA 40	Carpentry II	0	25	400
		3	31	544

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

TILE SETTING (TL)

Certificate / Two Years

Manual dexterity, patience, and pride in workmanship - prerequisites of the trade - are stressed throughout the Tile Setting Program. You will gain proficiency in tile including its color, size, shape, and use, and you will also become adept in resilient floor covering installation.

Types of Jobs: Self-employment, store, factory, construction firms, etc.

Job Opportunities: Excellent with ability to enter the building trade with specific skills.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TL 11	Basic Fundamentals	0	6	96
TL 12	Tile Materials	0	2	32
TL 13	Mastic Installation	0	7.5	120
TL 14	Building Maintenance	0	12	192
TL 15	Shop Math	5	0	80
		5	27.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TL 21	Basic Fundamentals	0	3.5	56
TL 22	Layout	0	2	32
TL 24	Building Maintenance	0	13	208
TL 25	Mosaic & Quarry Tile	0	13	208
TL 26	Blueprint Reading	1	0	16
		1	31.5	520

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TL 31	Estimating	4	0	64
TL 32	Conventional Mortar Methods	0	12	192
TL 34	Bldg. Maintenance	0	11	176
TL 35	Dry Set Portland Cement Method	0	5.5	98
		4	28.5	530

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	0	48
TL 42	Basic Fundamentals	0	4	64
TL 43	Sheet Goods	0	12	192
TL 44	Resilient Tile	0	11.5	185
TL 45	Estimating	2	0	32
		5	27.5	521

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

WOODWORKING MACHINE OPERATOR (MO)

Certificate / One Year

This program will train you to work with foremen, managers, and designers in the wood manufacturing industries. High quality performance of work and production in the application of modern woodworking practices will be stressed to prepare you to meet high production standards and to adapt to new developments.

Types of Jobs: Operators in various woodworking plants; group leader; foreman; shipping department work; stock billing responsibilities; office and management positions.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MO 10	Safety Education, Lumber, Veneers and Plywood	1	2	48
MO 11	Hand Tools	0	3	48
MO 12	Blueprint Reading, Shop Drawings & Layout	2	1	48
MO 13	Shop Math	3	0	48
MO 14	Hand Operations	0	3	48
MO 15	Fastening & Holding Devices	0	1	16
MO 16	Portable Power Tools	0	3	48
MO 17	Power Sanding	0	1	16
MO 18	Production Jigs & Fixtures	0	10.5	168
MO 19	Assembly, Gluing & Clamping	0	2	32
		6	26.5	520

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MO 20	Stock Billing	1	0	16
MO 21	Wood Shop Machines	0	8.5	136
MO 22	Production Techniques	1	2	48
MO 23	Moulder Setup	0	6	96
MO 24	Tenonor Setup	0	1	16
MO 25	Mortising	0	1	16
MO 26	Machine Production	0	9	144
MO 27	Knife Grinding & Layout	0	3	48
		2	30.5	520

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *building construction department*

AT 12 STRUCTURES I

For course description, see Drafting Department, page 121.

AT 25 BASIC ARCHITECTURAL DRAFTING

For course description, see Drafting Department, page 122.

BC 10 SAFETY EDUCATION 16 Hrs.

Importance of safety; causes of accidents, prevention; safety practices in the use of hand and machine tools.

BC 11 HAND TOOLS 112 Hrs.

Selection, care and use of hand tools; layout tools; cutting and facing tools; fastening tools, etc.

BC 12 BLUEPRINT READING 80 Hrs.

Reading, interpretation, familiarization with orthographic projections; ability to read and interpret drawings; study of detail drawings.

BC 13 RELATED MATH 80 Hrs.

Fundamentals of math: fractions; decimals; percentages; discounts; ratio and proportion, etc.

BC 14 INDENTIFICATION OF LUMBER 32 Hrs.

Identifying characteristics of wood grains; densities; color; texture; nail-holding power and workability.

BC 15 BENCH WORK AND HAND OPERATION 168 Hrs.

Development of craftsmanship and skill essential to perform work acceptable to industry.

BC 18 PORTABLE POWER TOOLS 112 Hrs.

Selection, care and use of portable electric tools, saws, drills, sanders, and portable routers.

BC 19 PRODUCTION JIGS AND FIXTURES 48 Hrs.

Design, construction and use of various types of production jigs and fixtures.

BC 20 ASSEMBLY, GLUING AND CLAMPING 152 Hrs.

Methods of gluing, clamping, and fastening wooden assemblies.

BC 21 STOCK BILLING 32 Hrs.

Listing quantities of material and preparing stock bills; work orders; routing.

BC 22 WOOD SHOP MACHINES 112 Hrs.

Instruction in safe use and operation of woodworking machines: crosscut saws, planers, jointers, straight line ripsaw, hand saws, shapers, etc.; care and maintenance of equipment.

BC 23 PRODUCTION TECHNIQUES 64 Hrs.

Study of production techniques and routing shop jobs, field trips to local industries.

CA 10 CARPENTRY I 400 Hrs.

Introduction to carpentry and building industry; use of hand tools, portable electric tools and woodworking machines; proper procedure and safe practice; use of framing square; study of wood and building products on market; selection and use of power drivers, other fastening devices.

CA 20 MASONRY I 400 Hrs.

Basic skills and fundamentals of masonry; block wood and concrete work in light building construction; instruction in hand tools, power equipment, testing, estimating, blueprint reading.

CA 30 MASONRY II 416 Hrs.

Brick construction, laying skills; selection of patterns; type of brick and brick architecture; estimating; layout; pricing of brick jobs.

CA 40 CARPENTRY II 400 Hrs.

Principles of frame house construction: foundation, layout, concrete form construction, framing the superstructure, sheathing and insulation, roof construction, exterior finish and millwork, interior finish, cabinet-work, and stairbuilding.

CB 10 WOODWORKING FOR CARPENTERS 4 Cr. - 128 Hrs.

Basic principles and skills of hand and machine woodworking operations; special projects.

CB 11 CONSTRUCTION CARPENTRY 4 Cr. - 128 Hrs.

Basic principles of frame construction: foundations and concrete formwork, types of building frames, strength of beams and girders, structural sheathing and house details; ideas and trends in construction methods and techniques.

CB 23 BLOCK CONSTRUCTION 5 Cr. - 256 Hrs.

Block laying skills in lab; practical work; classroom instruction covering materials used, types and sizes of blocks, principles of cost estimating.

CB 24 ESTIMATING AND BLUEPRINTS 2 Cr. - 32 Hrs.

Introduction; types of drawings; lines, marks, symbols, conventions, scales, dimensions, etc.; quantities of material and cost estimating.

CB 30 ROOF-FRAMING THEORY 3 Cr. - 48 Hrs.

Principles of rafter layout, use of framing square, problems of roof framing and construction, types of roofs and rafters.

CB 33 BRICK CONSTRUCTION 4 Cr. - 176 Hrs.

Laying various patterns of brick to meet industrial standards with speed and accuracy; following architect's drawings; chimney, fireplace and wall projects.

CB 40 ADVANCED CARPENTRY 4 Cr. - 128 Hrs.

Advanced woodworking techniques and fundamentals of finished carpentry; modern finishing materials; methods of application; exterior and interior trim; millwork, cornice work, roofing, siding, frame for openings, interior wall and ceiling material; trim and mouldings; built-in cabinet work; stair building. Three lecture hours, nine hours lab; live, school-sponsored construction work.

CB 42 BUILDING CONSTRUCTION TECHNOLOGY 6 Cr. - 192 Hrs.

Covers advanced technical aspects of building construction, solution of practical problems; includes special advanced projects, construction work around the campus, live house construction projects sponsored by the College. Three hours lecture, nine hours lab.

CB 44 CONCRETE CONSTRUCTION 3 Cr. - 80 Hrs.

Principles of concrete design, water-cement ratio, proportions of ingredients, reinforced concrete, study of concrete footers and walls, finishing with hand and power trowel equipment, proper methods of curing and testing.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

EL 12 BASIC WIRING LAB

For course description, see Electrical Department, page 133.

EW 12 BASIC WIRING LAB

For course description, see Electrical Department, page 135.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

MO 10 SAFETY EDUCATION, LUMBER, VENEERS AND PLYWOOD 48 Hrs.

Safety education applied to a machine operator, safety zones, position and stance of the operator, methods of guarding the machines.

MO 11 HAND TOOLS 48 Hrs.

Training in the use of special hand tools used by the machine operator such as protractor, caliper, micrometer, etc.

MO 12 BLUEPRINT READING, SHOP DRAWINGS AND LAYOUT 48 Hrs.

Principles of orthographic projection, reading and interpreting shop drawings, details, layout of shop drawings.

MO 13 SHOP MATH 48 Hrs.

Fundamentals of shop math: fractions, decimals, percentages, discounts, ratio and proportion, etc.

MO 14 HAND OPERATIONS 48 Hrs.

Basic fundamentals of hand tools, rules, scales, height gauges, wrenches.

MO 15 FASTENING AND HOLDING DEVICES 16 Hrs.

Holding and fastening devices such as clamps, vices, nails, screws, bolts, anchors, etc.

MO 16 PORTABLE POWER TOOLS 48 Hrs.

Care and use of power tools: straight line and orbital sanders, electric drills and screw drivers, saber and circular saws, routers, etc.

MO 17 POWER SANDING 16 Hrs.

Types of sanders and methods of hand and power sanding; types of abrasive papers and methods of application.

MO 18 PRODUCTION JIGS AND FIXTURES 168 Hrs.

Design and construction of jigs and fixtures used in production wood work; application of production techniques.

MO 19 ASSEMBLY, GLUING & CLAMPING 32 Hrs.

Types and uses of conventional and modern glues, including the electronic glue machine; assembly methods and procedures.

MO 20 STOCK BILLING 16 Hrs.

Quantity surveys; detailing, stock billing; routing; factory orders.

MO 21 WOOD SHOP MACHINES 136 Hrs.

Instruction in safe operation of wood working machines: crosscut and rip saws, planers, jointers, band saws and special production machines.

MO 22 PRODUCTION TECHNIQUES 48 Hrs.

Production of duplicate parts with small tolerances, routing of shop jobs, plant visitation to study industrial procedures.

MO 23 MOULDER SETUP 96 Hrs.

Instruction and practice in setup and operation of a "sticker" or moulder.

MO 24 TENONOR SETUP 16 Hrs.

Setup and operation of the tenoning machine, stressing safety.

MO 25 MORTISING 16 Hrs.

Setup and operation of the hollow chisel mortising machine.

MO 26 MACHINE PRODUCTION 144 Hrs.

Further use of woodworking machines; production standards emphasized.

MO 27 KNIFE GRINDING AND LAYOUT 48 Hrs.

Knife layout using dies and scribers, freehand grinding, knife balancing.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TL 11 BASIC FUNDAMENTALS 96 Hrs.

Care and use of hand and power tools, basic tile setting operations, cutting and shaping tile.

TL 12 TILE MATERIALS 32 Hrs.

Study of materials used in tile manufacturing in relation to installation procedures; study of tile trims, angles, sizes, glazes, accessories.

TL 13 MASTIC INSTALLATION 120 Hrs.

Installation of tile with adhesives, wet and dry locations; limitations of adhesives.

TL 14 BUILDING MAINTENANCE 192 Hrs.

Simulation of on-the-job-training by installing permanent tile jobs in college buildings.

TL 15 SHOP MATHEMATICS 80 Hrs.

Mathematics used in tile setting trade such as addition, subtraction, division, multiplication, percentage, decimals, volumes, areas, lateral surfaces and square root.

TL 21 BASIC FUNDAMENTALS 56 Hrs.

Basic fundamentals and introduction to installation of mosaic and quarry tile.

TL 22 LAYOUT 32 Hrs.

Problems of job layout: appearance, economy, labor.

TL 24 BUILDING MAINTENANCE 208 Hrs.

Continuation of TL 14.

TL 25 MOSAIC AND QUARRY TILE 208 Hrs.

Installation of mosaic and quarry tile, floors, decks; use of mortar and dry set Portland Cement.

TL 26 BLUEPRINT READING 16 Hrs.

Procedure in obtaining measurements, reading symbols from prints used for tile layouts and estimates.

TL 31 ESTIMATING 64 Hrs.

Methods of estimating materials and costs of tile installations.

TL 32 CONVENTIONAL MORTAR METHOD 192 Hrs.

Installation of tile by conventional mortar method, use of back-up materials.

TL 34 BUILDING MAINTENANCE 176 Hrs.

Continuation of TL 24.

TL 35 DRY SET PORTLAND CEMENT METHOD 98 Hrs.

Steps in conventional mortar method; variations, advantages.

TL 42 BASIC FUNDAMENTALS 64 Hrs.

Care and use of hand tools in linoleum trade; introduction to basic operations.

TL 43 SHEET GOODS 192 Hrs.

Installation of 6' wide sheet goods by straight scribing, template scribing and "cutting in" methods; inclusion of

sheet goods material, pastes, cements, correct selection of materials.

TL 44 RESILIENT TILE 185 Hrs.

Installation of 9x9 and 12x12 resilient tile: vinyl asbestos, asphalt; cements and pastes used.

TL 45 ESTIMATING 32 Hrs.

Floor layout and cost estimates in relation to floor size, types of material used.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGNOMETRY

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT & LIGHT

For course description, see Science Department, page 199.

TW 10 DESIGN OF WOOD 2 Cr. - 96 Hrs.

Use of wood in modern design; period furniture design and contemporary styles; wood technology; processed wood, plywood, hardboard and particle board.

TW 11 LAYOUT AND CUTTING 5 Cr. - 240 Hrs.

Use and care of hand tools; layout cutting and joining wood; use of special tools, micrometers, calipers, etc..

TW 20 MACHINE CUTTING 1 Cr. - 48 Hrs.

Methods of accurately producing duplicate wood parts to close tolerance acceptable to industry.

TW 21 WOOD SHOP MACHINES 4 Cr. - 192 Hrs.

Use and care of woodworking machines; setup and operation of saws, jointers, planers, shapers, sanders, etc.

TW 30 WOOD TURNING 1 Cr. - 48 Hrs.

The care and use of the conventional wood turning lathe; grinding and sharpening turning chisels.

TW 31 FASTENING 2 Cr. - 96 Hrs.

Wood joinery; fastening devices such as nails, screws, bolts, fasteners, metal-wood connectors, etc.; mixing, applying, and testing glues.

TW 32 VENEERS AND VENEERING, LAMINATING, BENDING AND MOLDING 2 Cr. - 96 Hrs.

Matching, bending, molding, gluing and laminating veneers; temperature and humidity control.

TW 40 PATTERNMAKING 1 Cr. - 48 Hrs.

Nomenclature; pattern layouts; making simple patterns.

TW 41 FINISHING 1 Cr. - 48 Hrs.

Preparation of wood for final finish; analysis of types of finish; care and cleaning of equipment; work with stains, varnish, lacquer, French polish, wax, etc.

TW 42 BLUEPRINT READING 2 Cr. - 96 Hrs.

Reading and interpreting working drawings; shop drawings and details, as required for stock billing.

TW 43 PRODUCTION JIGS AND FIXTURES 3 Cr. - 144 Hrs.

Design, construction and use of various types of jigs and fixtures.

TW 44 KNIFE GRINDING AND LAYOUT 2 Cr. - 96 Hrs.

Design, layout and grinding of knives, cutters, etc.; freehand grinding, knife balancing and safety.

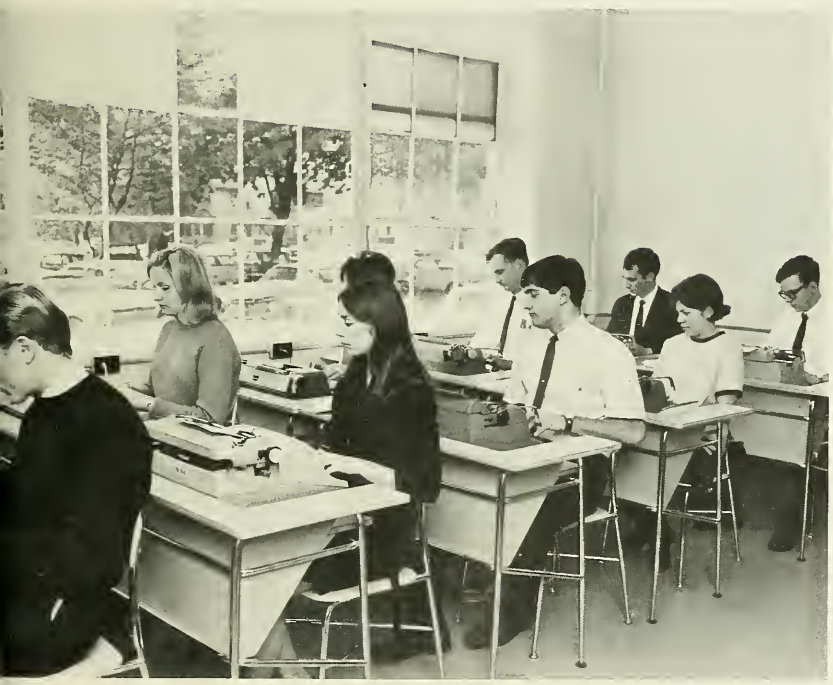
RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

BUSINESS ADMINISTRATION DEPARTMENT / Career Programs

DONALD BERGERSTOCK, Chairman



Associate Degree

BA Accounting
BM Business Management
BS Secretarial Science
Executive, Legal, Medical, Technical

Certificate

BT Clerk-Typist

ACCOUNTING (BA)

Associate Degree / Two Years

The accounting sequence is designed to give you a broad business background with specialization in the field of accounting. You will begin on the elementary levels of accounting and mathematics and will advance into the more complex stages. Upon graduation, you will be qualified for immediate self-employment or association with a business.

Types of Jobs: Public, private, government, corporate, cost accounting; tax consultant; auditor; comptroller; etc.

Job Opportunities: Tremendous growth of small and big businesses have increased the demands for well-trained accountants. Excellent starting salaries with opportunities for professional growth.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
BA 12	Accounting	3	3	0	48
TM 11	Business Algebra	3	3	0	48
BS 10	Typewriting	2	2	3	80
BM 13	Principles of Business	3	3	0	48
	Physical Education 101	1	0	2	32
		15	14	5	304

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 25	Business English	3	3	0	48
BA 22	Accounting	3	3	0	48
TM 25	Business Mathematics	3	3	0	48
BM 33	Business Organization and Management	3	3	0	48
BM 14	Office Machines	2	1	4	80
	Physical Education 102	1	0	2	32
	*Elective	3	3	0	48
		18	16	6	352

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BA 32	Accounting	3	3	0	48
BM 31	Business Law	3	3	0	48
BM 35	Psychology	3	3	0	48
BS 23	Office Practice	2	2	1	48
CS 01	Intro. to Data Processing	3	3	1	64
	Economics Elective	3	3	0	48
		17	17	2	304

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BA 42	Cost Accounting	3	3	0	48
BM 41	Business Law	3	3	0	48
BA 43	Payroll and Tax Accounting	3	3	0	48
EC 46	Economics	3	3	0	48
	*Elective	3	3	0	48
		15	15	0	240

*Elective: *Any related business course.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Business mathematics or algebra.

BUSINESS MANAGEMENT (BM)

Associate Degree / Two Years

Executive or management positions are yours if you complete the Business Management Program. The program sequence will provide you with basic business knowledge. You will study management theory and application procedures. Business concepts and implications for our economy will be covered in the program, and specific employment objectives will be stressed.

Types of Jobs: Junior-executive or management-trainee positions in manufacturing, retailing, finance, banking, insurance, marketing, government, etc..

Job Opportunities: Three or four job offers per graduate with excellent starting salaries and opportunities for advancement.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
BA 12	Accounting	3	3	0	48
BM 14	Office Machines	2	1	4	80
BM 13	Principles of Business	3	3	0	48
TM 11	Business Algebra	3	3	0	48
	Physical Education 101	1	0	2	32
		15	13	6	304

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 25	Business English	3	3	0	48
BA 22	Accounting	3	3	0	48
BS 10	Typewriting	2	2	3	80
BM 33	Business Organization and Management	3	3	0	48
TM 25	Business Mathematics	3	3	0	48
	Physical Education 102	1	0	2	32
	*Elective	3	3	0	48
		18	17	5	352

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BM 31	Business Law	3	3	0	48
BS 23	Office Practice	2	2	1	48
BM 35	Psychology	3	3	0	48
BM 36	Marketing	3	3	0	48
CS 01	Intro. to Data Processing	3	3	1	48
	Economics Elective	3	3	0	48
		17	17	2	288

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BM 41	Business Law	3	3	0	48
BM 45	Finance	3	3	0	48
EC 46	Economics	3	3	0	48
BA 43	Payroll and Tax Accounting	3	3	0	48
	*Elective	3	3	0	48
		15	15	0	240

*Elective: *Any related business course.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Business mathematics or algebra.

SECRETARIAL SCIENCE (BS)
Executive, Legal, Medical, Technical

Associate Degree / Two Years

The Secretarial Science Program is designed for you if you are planning a career as a secretary or office supervisor. The program is structured to give you proficiency in secretarial skills, a balanced knowledge of business and the liberal arts, and additional training in a chosen area of specialization. By selecting the proper courses, you will be qualified for responsible entrance positions in one of these fields: executive, legal, medical, and technical.

Types of Jobs: Business offices in commerce, government, industry, or the professions.

Job Opportunities: Excellent with top salaries in specialized fields.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BS 10	Typewriting	2	2	3	80
BS 14	Shorthand	3	4	1	80
TE 21	Speech	3	3	0	48
BA 12	Accounting	3	3	0	48
BM 14	Office Machines	2	1	4	80
HI 21	U.S. History	3	3	0	48
	Physical Education 101	1	0	2	32
		17	16	10	416

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
*BS 34	Shorthand Workshop	7	5	6	176
BM 13	Principles of Business	3	3	0	48
BS 30	Typewriting	2	2	3	80
	*Specialization	3	3	0	48
		15	13	9	352

*SPECIALIZATION COURSES

ST 30	Medical Terminology	Medical
BM 31	Business Law	Legal
TE 31	Introduction to Literature	Exec. & Tech.

*These courses are directed to the area of specialization for students majoring as an executive, legal, medical or technical secretary. The two basic workshop courses are also designed to include such specialization.

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 25	Business English	3	3	0	48
TM 25	Business Mathematics	3	3	0	48
BS 23	Office Practice	2	2	1	48
BS 24	Shorthand	3	4	1	80
BS 20	Typewriting	2	2	3	80
	*Specialization	3	3	0	48
	Physical Education 102	1	0	2	32
		17	17	7	384

*SPECIALIZATION COURSES

ST 25	Anatomy and Physiology	Medical
BM 35	Psychology	Exec., Legal, Tech.
	or	
	Sociology 101	Exec., Legal, Tech.

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
*BS 44	Secretarial Workshop	9	6	9	240
EC 46	Economics	3	3	0	48
BS 45	Office Internship	1	0	3	48
	*Specialization	3	3	0	48
		16	12	12	384

*SPECIALIZATION COURSES

BM 35	Psychology	Medical
	or	
	Sociology 101	Medical
BM 41	Business Law	Legal
BM 33	Business Organization & Management . .	Exec. & Tech.

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

CLERK-TYPIST CERTIFICATE (BT)

Certificate / One Year

The one-year Clerk-Typist Certificate Program is designed to give you fundamentals in typewriting and business machine calculation. You will master indexing principles, filing, and basic office procedures, and you may elect shorthand, accounting, or other related courses to aid you in your vocation.

Types of Jobs: Clerk-typist, business machine operator, filing, general clerical and elementary accounting work, shorthand and transcription.

Job Opportunities: Unlimited; starting salaries are dependent upon the duties you perform.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
BS 10	Typewriting	2	3	80
BM 14	Office Machines	1	4	80
BS 11	Business Behavior	2	0	32
BS 12	Clerical Workshop	2	5	112
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
	*Elective	3	2	80
		16	14	480

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EC 02	Economics	3	0	48
TE 25	Business English	3	0	48
TM 25	Business Mathematics	3	0	48
BM 24	Office Machines	1	4	80
BS 20	Typewriting	2	3	80
BS 25	Clerical Procedures	3	3	96
	*Electives	3	2	80
		18	12	480

*Students may elect shorthand, accounting, or other courses that coincide with their vocational objective.

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *business administration department*

BA 12 ACCOUNTING 3 Cr. - 48 Hrs.

Introduction to basic accounting principles: accounting cycle; preparation and interpretation of statements and reports for proprietorships and partnerships. Three lecture hours; lab problems.

BA 13 APPLIED ACCOUNTING MANAGERIAL 3 Cr. - 48 Hrs.

Continuation of basic accounting principles: accounting cycle, job order; process cost accounting, budgetary control, analysis and interpretation of financial statements and reports.

BA 22 ACCOUNTING 3 Cr. - 48 Hrs.

Advanced accounting principles as they apply to different forms of business: corporate accounting, "problems of" manufacturing, departmental and branch operations. Three lecture hours; lab problems; practice sets.
Prerequisite: BA 12 or Department Permission.

BA 32 ACCOUNTING 3 Cr. - 48 Hrs.

Study of intangible assets, liabilities, stockholders equities; analysis and interpretation of financial reports and statements. Three lecture hours; lab exercises; problems.
Prerequisite: BA 22

BA 42 COST ACCOUNTING 3 Cr. - 48 Hrs.

Records and inventories, business transactions; determining costs after processing, profit through distribution.
Prerequisite: BA 22

BA 43 PAYROLL AND TAX ACCOUNTING 3 Cr. - 48 Hrs.

Payroll procedures, individual and small business federal income taxes, state income taxes.
Prerequisite: BA 12

BM 13 PRINCIPLES OF BUSINESS 3 Cr. - 48 Hrs.

Business procedures, business in American economic systems.

BM 14 OFFICE MACHINES 2 Cr. - 80 Hrs.

Understanding and operation of ten-key, full-keyboard-adding-listing, rotary, key-driven calculator machines.

BM 24 OFFICE MACHINES 2 Cr. - 80 Hrs.

Continuation of BM 14, duplication machines, transcribing equipment. Course may be substituted for office practice.
Prerequisite: BM 14

BM 31 BUSINESS LAW 3 Cr. - 48 Hrs.

Evolution of law, individual and business contracts, negotiable instruments, personal property sales, bailment contracts.

BM 33 BUSINESS ORGANIZATION AND MANAGEMENT 3 Cr. - 48 Hrs.

Structure, establishment and financing of sole proprietorships, partnerships, corporations; elements of an organization; principles of authority, accountability and responsibility; levels' theory; communication; policy formulation; incentive and efficiency.

BM 34 OFFICE MACHINES 2 Cr. - 48 Hrs.

Advanced office machines; accounts receivable, payroll, inventory control machines.
Prerequisite: BM 14 or department permission.

BM 35 PSYCHOLOGY 3 Cr. - 48 Hrs.

Personal adjustments for employees; modern business behavior problems.

BM 36 MARKETING 3 Cr. - 48 Hrs.

Merchandising methods; distribution channels; pricing; cost; brands; government regulations; influence of buyer and consumers on marketing programs; current marketing trends.

BM 37 BANKING AND INVESTMENTS 3 Cr. - 48 Hrs.

Importance of banking industry to business and economic growth, personal and business banking services, stocks and bonds marketing.

BM 38 INSURANCE 3 Cr. - 48 Hrs.

Structure and practice of insurance field; types and uses of policies; importance of insurance.

BM 39 REAL ESTATE 3 Cr. - 48 Hrs.

Real estate basics: real property ownership, lease arrangements, legal aspects of property transactions; functions and procedures of real estate broker.

BM 41 BUSINESS LAW 3 Cr. - 48 Hrs.

Insurance law contracts; surety and guaranty agreements; partnerships; corporations; real property; wills; bankruptcy proceedings; court systems; lawsuit procedures.
Prerequisite: BM 31

BM 45 FINANCE 3 Cr. - 48 Hrs.

Private and public finance; monetary and credit systems, policies, problems; factors affecting supply of funds.

BM 47 SMALL BUSINESS MANAGEMENT 48 Hrs.

Location, plant layout, financial problems, records, forms, purchasing, inventory, employer-employee relations, basic business law, and improvement of small business enterprises.

BS 09 TYPEWRITING 1 Cr. - 48 Hrs.

Offered to non-business students. Touch typing, accuracy, speed, report copy, business letters and reports.

BS 10 TYPEWRITING 2 Cr. - 80 Hrs.

Basics of typewriting: touch typing, mechanical parts, speed, accuracy, business letters and forms. Students passing required standards may be exempt and may elect another subject.

BS 11 BUSINESS BEHAVIOR 2 Cr. - 32 Hrs.

Personal evaluations, good working habits and attitudes.

BS 12 CLERICAL WORKSHOP 112 Hrs.

Advanced, office-level typewriting; typing manuscripts, reports, office forms, statistics, production work. Required for Clerk-Typist Certificate Program.

BS 14 SHORTHAND 3 Cr. - 80 Hrs.

Basics of Gregg shorthand, Diamond Jubilee system; outlines; proper techniques; fluency in reading and writing shorthand; dictation.

BS 20 TYPEWRITING 2 Cr. - 80 Hrs.

Advanced typing practices, production typing, special skill techniques, advanced letter writing and tabulation reports, legal forms and documents, clerical duties.
Prerequisite: BS 10 or test qualification.

BS 23 OFFICE PRACTICE 2 Cr. - 48 Hrs.

Operation and practice of ditto, mimeograph, dictating, and transcribing machines; general office practice.

BS 24 SHORTHAND 3 Cr. - 80 Hrs.

Continuation of BS 14; pre-transcription training; vocabulary, spelling, punctuation stressed.

BS 25 CLERICAL PROCEDURES 96 Hrs.

Preparation for immediate employment, skills in office work, practice in office assignments, development of personal qualities.

BS 30 TYPEWRITING 2 Cr. - 80 Hrs.

Creative skills, report and manuscript typing, statistical reports, advanced production typing.

BS 34 SHORTHAND WORKSHOP 7 Cr. - 176 Hrs.

Speed and accuracy dictation and transcription of business letters; business and industry dictation; business forms and office skills; medical, legal, technical shorthand specialization; basic executive skills.

BS 44 SECRETARIAL WORKSHOP 9 Cr. - 240 Hrs.

Advanced dictation and transcription skills; specialization in medical, legal, technical and executive fields; executive office functions; practical experience.

BS 45 OFFICE INTERNSHIP 1 Cr. - 48 Hrs.

Practical experience obtained through work assignments in college offices.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 110.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 46 ECONOMICS

For course description, see Economics Department, page 128.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

HI 21 U.S. HISTORY 3 Cr. - 48 Hrs.

The development of the United States and Pennsylvania since Reconstruction with emphasis on social, political, and economic implications.

ST 25 ANATOMY AND PHYSIOLOGY 3 Cr. - 48 Hrs.

A study of basic human anatomy and physiology; cells, tissues, and tumors; nervous, excretory, reproductive, and endocrine systems; diseases; principles of chemistry, microbiology and physics.

ST 30 MEDICAL TERMINOLOGY 3 Cr. - 48 Hrs.

An introduction to medical terminology with emphasis on etiology, symptomatology, pathology, and diagnostic procedures as related to secretarial functions.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TE 25 BUSINESS ENGLISH

For course description, see English Department, page 143.

TE 31 INTRODUCTION TO LITERATURE

For course description, see English Department, page 143.

TM 11 BUSINESS ALGEBRA

For course description, see Mathematics Department, page 178.

TM 25 BUSINESS MATHEMATICS

For course description, see Mathematics Department, page 178.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

SOCIOLOGY 101 3 Cr. - 48 Hrs.
INTRODUCTION TO SOCIOLOGY

Introduction to methods used by sociologists in studying how people live together. Dynamic relationships among society, culture, and personality serve as focus for the course materials.

COMPUTER SCIENCE DEPARTMENT / Career Programs

JEROME A. BASSETT, Chairman

Associate Degree

CS Engineering Computer Science Technology

DP Business Computer Science Technology

ENGINEERING COMPUTER SCIENCE TECHNOLOGY (CS)

Associate Degree / Two Years

This course is designed to provide you with industrial and governmental computer-programmer training for scientific applications. You will prepare and solve procedures for computer execution. You will gain a broad and thorough knowledge of programming techniques and experience in operation of computer systems and peripheral data processing equipment. Mathematics and science are stressed in the program.

Types of Jobs: Computer console operator, computer programmer, junior systems' analyst, engineering technician.

Job Opportunities: Unlimited with excellent starting salaries and advancement possibilities. With experience and continued study, you may rise to executive positions in the data processing field.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 11	English Composition	3	3	0	48
BA 12	Accounting	3	3	0	48
TM 21	Trigonometry	4	4	1	80
CS 10	Basic Data Processing Mach.	3	2	4	96
CS 11	Computer Programming I	4	2	6	128
		17	14	11	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
TM 23	Finite Math-Statistics	5	5	0	80
CS 12	Computer Programming II	3	2	4	96
CS 13	Computer Philosophy	3	3	1	64
	Physical Education 101	1	0	2	32
		19	17	7	384

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 31	Calculus I	3	3	0	48
CS 21	Computer Programming III	3	2	4	96
CS 24	Linear Programming	3	3	2	80
CS 26	Applied Technical Programming	3	3	2	80
	*Physics Elective	3	3	0	48
	Physical Education 102	1	0	2	32
		16	14	10	384

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	3	0	48
TM 41	Calculus II	3	3	0	48
CS 23	Systems Development	4	3	4	112
CS 25	Computer Programming IV	4	3	4	112
CS 28	Numerical Methods & Programming	3	3	2	80
		17	15	10	400

*Elective: *TS 21 Physics-Mechanics.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Two years of algebra; one year of geometry; one year of science.

BUSINESS COMPUTER SCIENCE TECHNOLOGY (DP)

Associate Degree / Two Years

Through enrollment in this course, you will receive industrial and governmental computer-programmer training for the commercial and business fields. You will create and prepare problem-solving procedures for computer execution. Broad and thorough computer concepts with experience on department systems and peripheral data processing equipment will make you efficient through practice. Business accounting and management are emphasized in related courses to insure you a well-rounded background in the field.

Types of Jobs: Computer console operator, programmer, junior systems analyst.

Job Opportunities: Unlimited with excellent starting salaries and growth potential to managerial positions such as senior systems analyst; data processing operations, programming, and data processing manager.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
BA 12	Accounting	3	3	0	48
TE 11	English Composition	3	3	0	48
CS 10	Basic Data Processing Mach.	3	2	4	96
CS 11	Computer Programming I	4	2	6	128
		17	14	11	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TM 23	Finite Math-Statistics	5	5	0	80
BA 22	Accounting	3	3	0	48
CS 12	Computer Programming II	3	2	4	96
CS 13	Computer Philosophy	3	3	1	64
	Physical Education 101	1	0	2	32
		19	17	8	400

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
BM 33	Business Organization and Management	3	3	0	48
CS 21	Computer Programming III	3	2	4	96
CS 24	Linear Programming	3	3	2	80
	*Business Mathematics or Science Elective	3	3	0	48
	Physical Education 102	1	0	2	32
		16	14	8	352

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	3	0	48
BA 42	Cost Accounting	3	3	0	48
CS 23	Systems Development	4	3	4	112
CS 25	Computer Programming IV	4	3	4	112
	**Computer Science Elective	3	2	4	96
		17	14	12	416

*Elective: *TM 25 Business Mathematics or TS 21 Physics-Mechanics.*

**Elective: *Any related computer science course.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry.

COURSE DESCRIPTIONS / *computer science department*

BA 12 ACCOUNTING

For course description, see Business Administration Department, page 104.

BA 22 ACCOUNTING

For course description, see Business Administration Department, page 104.

BA 42 COST ACCOUNTING

For course description, see Business Administration Department, page 104.

BM 33 BUSINESS ORGANIZATION AND MANAGEMENT

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING 3 Cr. - 64 Hrs.

(For non-computer science majors only) General introductions to data processing and the concept of unit record systems, practice and theory in operation and wiring, study of power and flexibility of unit record systems.
Prerequisite: None

CS 02 TECHNICAL COMPUTER PROGRAMMING 3 Cr. - 64 Hrs.

(For non-computer science majors only) Algebraic programming for technical students; essentials and basic concepts of computer system components, computer logic, flow charting; programming and problem solving with the Fortran language.
Prerequisites: TM 11 or TM 13

CS 10 BASIC DATA PROCESSING MACHINES 3 Cr. - 96 Hrs.

Theory and practice on unit record systems: machine functions, wiring, operations of card punch, verifier, interpreter, sorter, reproducer, collator, and accounting machine.
Prerequisite: None

CS 11 COMPUTER PROGRAMMING I 4 Cr. - 128 Hrs.

Introduction to computer systems and components; programming logic, machine language and symbolic programming languages with applied problems, program flow charting, wiring, testing, debugging, documentation, and basic programming techniques.
Prerequisite: None

CS 12 COMPUTER PROGRAMMING II 3 Cr. - 96 Hrs.

Fortran language programming as applied to engineering, mathematics and business problems; utilization of disc storage; monitor and plotter systems.
Prerequisites: CS 11, TM 13 or equivalent

CS 13 COMPUTER PHILOSOPHY 3 Cr. - 64 Hrs.

Study of basic logic and problem organization for data processing applications; general introduction to the concepts and structures of programming, operating, and data communication systems; comprehensive background for future courses.
Prerequisite: CS 11

CS 21 COMPUTER PROGRAMMING III 3 Cr. - 96 Hrs.

Assembler language programming for typical commercial applications; study of programming techniques, random access storage, and their use in the execution of problem exercises; accounts receivable, accounts payable, inventory, payroll, etc..
Prerequisite: CS 13

CS 23 SYSTEMS DEVELOPMENT 4 Cr. - 112 Hrs.

Study of complete data processing systems; analysis of system specifications, equipment selection, flow charting, programming, testing, documentation and implementation; solution of advanced problems from conception to documentation.
Prerequisites: CS 10, CS 21

CS 24 LINEAR PROGRAMMING 3 Cr. - 80 Hrs.

Presentation of basic concepts of linear programming techniques and objectives; identification of linear programming problems in the field of scientific management techniques and operations research. Course developed from graphical methods of solution through simplex method.
Prerequisite: CS 12

CS 25 COMPUTER PROGRAMMING IV 4 Cr. - 112 Hrs.

Development of fluency in writing computer programs in COBOL; advanced techniques and applications; study of third generation computers and related software, such as System 360, PL/1, OS and DOS.
Prerequisite: CS 21

CS 26 APPLIED TECHNICAL PROGRAMMING 3 Cr. - 80 Hrs.

Training in the application of computers to such technical areas as numerical control, civil engineering, drafting systems and computerized typesetting; utilization of N/C drilling machines, plotters and photo composition equipment.
Prerequisite: CS 12 or CS 02

CS 28 NUMERICAL METHODS AND PROGRAMMING 3 Cr. - 80 Hrs.

Basic concepts of the methods used for numerical solution of problems in mathematics and engineering; typical scientific problems.
Prerequisites: CS 12, TM 23, TM 41

CS 30 RESEARCH TOPICS IN COMPUTER SCIENCE 3 Cr.

Supervised individual research projects; student assigned to department professor or to a local industrial data processing installation for on-the-job training.
Prerequisite: Two semesters of computer science

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TM 23 FINITE MATHEMATICS-STATISTICS

For course description, see Mathematics Department, page 178.

TM 31 CALCULUS I

For course description, see Mathematics Department, page 178.

TM 41 CALCULUS II

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

BUSINESS ADMINISTRATION 205 3 Cr. - 48 Hrs.
AUTOMATIC DATA PROCESSING
Introduction to automatic data processing. Concepts and operation of unit record equipment, basic computer systems and programming. Techniques, data files and case studies application.

ENGINEERING 250 - COMPUTERS AND 3 Cr. - 48 Hrs.
ENGINEERING ANALYSIS

Study of basic computer systems, structure of computer programs and numerical methods in solution of mathematical engineering and related problems. Development of computational algorithms; construction of logic charts and heuristic programming concepts.

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

DRAFTING DEPARTMENT / Career Programs

FRED R. JONES, Chairman

Associate Degree

AT Architectural Technology
CT Civil Engineering Technology
ED Engineering Drafting Technology
TD Tool Design Technology
TI Technical Illustration

Certificate

MD Mechanical Drafting
MI Mechanical Illustration

ARCHITECTURAL TECHNOLOGY (AT)

Associate Degree / Two Years

The Architectural Technology Program will prepare you for a position in an architect's office or in an engineering office. You will receive training in accepted drafting practices by doing residential and commercial working drawings, first and second year design fundamentals, structural calculations, and site planning. The program will offer you a broad background and prepare you for advancement in this field.

Types of Jobs: Private practice, employment in corporation departments and public bureaus, construction business, landscape architecture firms, and engineering fields.

Job Opportunities: Good with excellent starting salaries and advancements.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AT 31	History of Architecture	3	3	0	48
AT 11	Statics (Science)	3	3	0	48
AT 21	Fund. of Architectural Graphics	4	0	12	192
*TM 13	Algebra	4	4	1	80
*TE 11	English Composition or English Composition 101	3	3	0	48
	Physical Education 101	1	0	2	32
		18	13	15	448

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AT 12	Structures I	2	2	0	32
AT 41	Building Materials & Methods I	2	2	0	32
AT 22	Architectural Graphics	3	1	6	112
AT 23	Architectural Working Drawings	4	0	12	192
*TM 21	Trigonometry	4	4	1	80
*TE 21	Speech or Speech 211	3	3	0	48
		18	12	19	496

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AT 13	Structures II	2	2	0	32
AT 42	Building Materials & Methods II	3	3	0	48
AT 51	Building Equipment I	3	3	0	48
AT 61	Design I	4	0	12	192
AT 62	Site Planning	3	2	3	80
AT 71	Seminar	1	1	0	16
	Physical Education 102	1	0	2	32
		17	11	17	448

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
AT 14	Structures III	2	2	0	32
AT 52	Building Equipment II	3	3	0	48
AT 63	Design II	6	0	18	288
AT 72	Professional Admin. & Contract Documents	2	2	0	32
AT 73	Seminar	1	1	0	16
*EC 11	Economics or Economics 201	3	3	0	48
		17	11	18	464

*To fulfill these requirements, qualified students may take appropriate courses in the School of Applied Arts and Sciences or the School of Liberal Arts and Sciences as approved by the department chairman and the deans.

Electives: *AT 64 Advanced Design I; AT 65 Advanced Design II. (For students entering with advanced placement.)*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

CIVIL ENGINEERING TECHNOLOGY (CT)

Associate Degree / Two Years

An Associate Degree in Civil Engineering Technology will qualify you to assist civil engineers in the planning, designing and construction of highways, railroads, bridges, airfields, dams, and buildings. You will study civil engineering requirements including surveying, cartography, photogrammetry, highway engineering, and structural design. Experience with modern equipment will prepare you to meet current industrial demands.

Types of Jobs: Engineering technician, surveyor, inspector, draftsman, cartographer, design technician, and photogrammetrist.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for advancements and further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 21	Speech	3	3	0	48
CT 10	Introductory Surveying	2	1	3	64
CT 11	Engineering Drawing	5	1	12	208
CT 12	Elementary Cartography	3	2	3	80
	Physical Education 101	1	0	2	32
		18	11	21	512

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 11	English Composition	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
CT 20	Plane Surveying	4	1	9	160
CT 21	Cartographic Techniques	3	1	6	112
		18	13	16	464

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	3	0	48
CT 30	Route Surveying	4	1	9	160
CT 31	Engineering Technology	4	3	3	96
CT 32	Statics and Strength of Materials	4	4	0	64
	*Elective (1)	3	3	0	48
		18	14	12	416

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
CT 40	Advanced Surveying	3	2	3	80
CT 41	Engineering Technology	3	1	6	112
CT 43	Photogrammetry	4	3	3	96
	*Elective (2)	6	6	0	96
	Physical Education 102	1	0	2	32
		17	12	14	416

***Electives:** *CT 42 Structures; TS 22 Introduction to Metallurgy; TM 31 Calculus I; CS 02 Technical Computer Programming; CS 26 Applied Technical Programming; Geology 101; Government 201; Psychology 101; Sociology 101; Geography 101.*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

ENGINEERING DRAFTING TECHNOLOGY (ED)

Associate Degree / Two Years

This program will give you a broad knowledge of mechanical drafting and engineering procedures and will provide you with the necessary background in mathematics, science and communications skills to work as a technician or engineering aide. As a graduate of this program you will be qualified to make a variety of engineering drawings and calculations within the scope of a given assignment.

Types of Jobs: Mechanical detail and layout draftsman, engineering assistant or aid, checker, field department supervisor, or jobs in related areas such as planning, traffic safety, maintenance and purchasing.

Job Opportunities: Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 10	Basic Drafting I	4	2	6	128
ED 11	Basic Drafting II	4	2	6	128
TM 13	Algebra	4	4	1	80
TE 21	Speech	3	3	0	48
ED 12	Industrial Processes	2	2	1	48
		17	13	14	432

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 20	Gears & Cams	4	2	6	128
ED 21	Mechanisms	4	2	6	128
TM 21	Trigonometry	4	4	1	80
TE 11	English Composition	3	3	0	48
	Physical Education 101	1	0	2	32
		16	11	15	416

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 30	Detail & Assembly Drawings	4	2	6	128
ED 31	Applied Drafting Techniques	4	2	6	128
TS 21	Physics-Mechanics	4	4	0	64
CS 02	Technical Computer Programming	3	3	1	64
EC 11	Economics	3	3	0	48
		18	14	13	432

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 40	Advanced Detail I	4	2	6	128
ED 41	Advanced Detail II	4	2	6	128
TS 32	Physics-Heat & Light	3	3	0	48
	*Elective	3-4	0	3	48-64
	Physical Education 102	1	0	2	32
		15-16	7	17	384-400

*Electives: *ED 51 Descriptive Geometry; TM 31 Calculus I; TS 22 Introduction to Metallurgy; TS 31 Physics-Electricity & Magnetism; ED 50 Advanced Detail & Design.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

TOOL DESIGN TECHNOLOGY (TD)

Associate Degree / Two Years

In Tool Design Technology you will specialize in planning and making drawings of special mechanical devices (cutting tools, gages, dies, jigs, fixtures) ranging from simple hand tools to complex progressive dies. You will learn drafting and tool room production practices, and you will produce tool drawings from ideas or suggestions. Writing the program for production jobs on tape-controlled machines is a tool design activity you will master.

Types of Jobs: Tool, machine, and product designer; numerical programmer, design draftsman, estimator, and systems program designer.

Job Opportunities: Unlimited in many industries with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 10	Basic Drafting I	4	2	6	128
ED 11	Basic Drafting II	4	2	6	128
TM 13	Algebra	4	4	1	80
TE 21	Speech	3	3	0	48
ED 12	Industrial Processes	2	2	1	48
		17	13	14	432

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 20	Gears and Cams	4	2	6	128
TD 21	Tool Drafting	4	2	6	128
TM 21	Trigonometry	4	4	1	80
TE 11	English Composition	3	3	0	48
TT 01	Basic Machine Shop	2	0	4	96
		17	11	17	480

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TD 30	Cutting Tool Design	4	2	6	128
TD 31	Fixture Design	4	2	6	128
TS 21	Physics-Mechanics	4	4	0	64
TT 02	Basic Machine Shop	2	0	4	96
CS 02	Technical Computer Programming	3	2	3	64
	Physical Education 101	1	0	2	32
		18	10	21	512

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TD 40	Gage Design and Programming	4	2	6	128
TD 41	Die Design	4	2	6	128
EC 11	Economics	3	3	0	48
TS 22	Introduction to Metallurgy	4	4	0	64
TT 03	Basic Machine Shop	2	0	4	96
	Physical Education 102	1	0	2	32
		18	11	18	496

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

TECHNICAL ILLUSTRATION (TI)

Associate Degree / Two Years

If you like to draw, if you are interested in machinery, aircraft, missiles, and automobiles, if you would like to work for industry, a career as a technical illustrator may appeal to you. You would work with the engineering draftsman or the technical writer. Your job would be to interpret engineering drawings into three-dimensional illustrations for clarification of difficult subjects. The courses leading to an Associate Degree in Technical Illustration will give you not only the drawing skills necessary for this work but also the broad background in science, mathematics, and communications helpful for advancement in industry.

Types of Jobs: Technical illustrator for industry, either in an engineering department or in a publications department. In the engineering field you would produce clear, accurate pictures drawn closely to the requirements of blueprints and made for use by engineers in installations manufacturing, design, production, and proposals for contracts. In the publications field you would make accurate and artistic illustrations for use in such company literature as parts and sales catalogs, maintenance, repair, and assembly manuals, charts, and handbooks

Job Opportunities: Technical illustration has advanced rapidly in industry in the last few years, and the demand for qualified people far exceeds the supply. Starting salaries are excellent.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ED 10	Basic Drafting I	4	2	6	128
ED 11	Basic Drafting II	4	2	6	128
ED 12	Industrial Processes	2	2	1	48
TE 21	Speech	3	3	0	48
TM 13	Algebra	4	4	1	80
		17	13	14	432

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TI 21	Perspective Drawing	4	2	6	128
TI 23	Rendering I	4	2	6	128
ED 03	Gears and Cams	2	1	3	64
TM 21	Trigonometry	4	4	1	80
GA 10	Reproduction Processes I	1	1	1	32
	Physical Education 101	1	0	2	32
		16	10	19	464

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TI 31	Axonometric Drawing	4	2	6	128
TI 33	Color	2	1	3	64
TI 34	Rendering II	4	2	6	128
TS 21	Physics-Mechanics	4	4	0	64
GA 30	Reproduction Processes III	1	0	3	48
		15	9	18	432

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TI 40	Illustration Practice	4	2	6	128
TI 41	Technical Drawing	4	2	6	128
TI 42	Layout & Design	2	1	3	64
TE 11	English Composition	3	3	0	48
EC 11	Economics	3	3	0	48
	Physical Education 102	1	0	2	32
		17	11	17	448

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; science.

MECHANICAL DRAFTING (MD)

Certificate / Two Years

In the Mechanical Drafting Program emphasis is placed upon drafting skills which will enable you to produce drawings for modern industry. You will learn the latest industrial processes which will improve and enhance your drawings and insure your efficiency.

Types of Jobs: Mechanical, sheet metal, electrical, or piping draftsman; related jobs such as estimator or field erection supervisor.

Job Opportunities: Unlimited with excellent starting salaries and opportunities for advancement and further industry-financed education.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 15	Drafting I	1	12	208
MD 16	Drafting II	1	12	208
GM 10	Arithmetic or GM 20	3	0	48
ED 12	Industrial Processes	2	1	48
		7	25	512

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 25	Drafting III	1	11	192
MD 26	Drafting IV	1	11	192
GM 20	Algebra or GM 30	3	0	48
TE 01	Communications I or TE 11	3	0	48
	Physical Education 101	0	2	32
		8	24	512

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 35	Drafting V	1	12	208
MD 36	Drafting VI	1	12	208
GM 30	Geometry-Trigonometry	3	0	48
TE 02	Communications II or TE 21	3	0	48
		8	24	512

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 45	Drafting VII	1	12	208
MD 46	Drafting VIII	1	12	208
GS 20	Physical Science or TS 21	3	0	48
EC 02	Economics or EC 11	3	0	48
		8	24	512

Elective: *MD 55 Drafting IX.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

MECHANICAL ILLUSTRATION (MI)

Certificate / Two Years

The Mechanical Illustration Certificate Program offers you an alternative to the Technical Illustration Degree Program if your goal is a career in the technical illustration field. While courses in the two programs are similar, mechanical illustration places more emphasis on the skills of mechanical drafting and technical illustration and less emphasis on general education. You will be prepared to interpret engineering drawings into three-dimensional illustrations for clarification and publication.

Types of Jobs: Mechanical draftsman or technical illustrator for industries which design or manufacture machinery, aircraft, missiles, automobiles, etc. Your position may be in an engineering department or in a publications department (see "Technical Illustration")

Job Opportunities: Mechanical Illustration has advanced rapidly in industry in the last few years, and the demand for qualified people far exceeds the supply. Starting salaries are excellent.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 15	Drafting I	1	12	208
MD 16	Drafting II	1	12	208
GM 10	Arithmetic or GM 20	3	0	48
ED 12	Industrial Processes	2	1	48
		7	25	512

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MD 25	Drafting III	1	11	192
MD 26	Drafting IV	1	11	192
GM 20	Algebra	3	0	48
TE 01	Communications I or TE 11	3	0	48
	Physical Education 101	0	2	32
		8	24	512

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TI 35	Technical Illustration I	1	12	208
TI 36	Technical Illustration II	1	12	208
GM 30	Geometry-Trigonometry	3	0	48
TE 02	Communications II or TE 21	3	0	48
		8	24	512

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TI 45	Technical Illustration III	1	12	208
TI 46	Technical Illustration IV	1	12	208
EC 02	Economics I or EC 11	3	0	48
GS 20	Physical Science or TS 21	3	0	48
		8	24	512

Electives: *TI 55 Technical Illustration V; MD 35 Drafting V; GA 10 Reproduction Processes I; GA 20 Reproduction Processes II. (For students entering with advanced placement.)*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *drafting department*

AT 11 STATICS (SCIENCE) 3 Cr. - 48 Hrs.

Algebraic and graphic determination of loads, reactions, shear and moment, deflection, loading and buckling, truss design, properties of areas.

AT 12 STRUCTURES I 2 Cr. - 32 Hrs.

Theory and design of wood and timber; identification, characteristics and classifications of wood; working stresses; design of beams, columns, joints, rafters, plank, laminated sections; timber connections, fastenings and their working properties; laminated lumber, shapes.

AT 13 STRUCTURES II 2 Cr. - 32 Hrs.

Theory and design of steel beams, columns, and connections (welded, bolted and riveted) for moment, shear, slope, deflections, axial and eccentric loads; the AISC Handbook; bearing capacity of masonry walls, design of bearing plates, steel joists, space frames and trusses.

AT 14 STRUCTURES III 2 Cr. - 32 Hrs.

Reinforced concrete building; theory and design of slabs, beams, compression steel, columns, prestressed concrete, footings, walls; floors; quantitative study of structural forms from the view of material development.

AT 21 FUNDAMENTALS OF ARCHITECTURAL GRAPHICS 4 Cr. - 192 Hrs.

Basic architectural graphic media; projection drawings; axonometrics and perspective; color and texture; introduction to the architectural model; basic vocabulary of architectural drawings: composition, space, form, value, texture, shades, shadows.

AT 22 ARCHITECTURAL GRAPHICS 3 Cr. - 112 Hrs.

Architectural rendering in various media; black and white, color problems; emphasis on development of technique, style, presentation.

AT 23 ARCHITECTURAL WORKING DRAWINGS 4 Cr. - 192 Hrs.

Laboratory practice in producing a complete set of architectural working drawings; emphasis on preparation, technique, content, thoroughness, continuity, lettering, presentation quality.

AT 25 BASIC ARCHITECTURAL DRAFTING 2 Cr. - 96 Hrs.

Fundamentals of architectural drawing for woodworking technology; use and care of drawing instruments and media, lettering, orthographic projection principles, preliminary drawing and sketching, preparation of working drawings, exterior and interior finish work, detailing cabinet and mill work.

AT 31 HISTORY OF ARCHITECTURE 3 Cr. - 48 Hrs.

Developmental survey of architecture and related fine arts from ancient times to the present; emphasis on development of site planning, form, space; methods of construction, materials in relation to man and his needs.

AT 41 BUILDING MATERIALS AND METHODS I 2 Cr. - 32 Hrs.

Study of typical materials of residental construction: their production, properties, use, performance in combinations.

AT 42 BUILDING MATERIALS AND METHODS II 3 Cr. - 48 Hrs.

Subsurface exploration and foundations, water-and dampproofing; methods and materials for construction of masonry, concrete walls, slabs; wall, floor, and roof systems; the curtain wall; fireproofing; building codes; architectural hardware.

AT 51 BUILDING EQUIPMENT I 3 Cr. - 48 Hrs.

Theory and design of plumbing, heating, air-conditioning, and control systems; sources and design of water supply; sanitary and storm systems; computation of plumbing, heating and cooling loads.

AT 52 BUILDING EQUIPMENT II 3 Cr. - 48 Hrs.

Theory and design of electrical service distribution systems; selection of electrical equipment, fixtures; electrical heating design; theory and measurement of light, sound; vertical transportation systems; sound systems.

AT 61 DESIGN I 4 Cr. - 192 Hrs.

Fundamental relationships of function, space, time, light, needs of man; introduction to the design process; collaborative work; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models.

AT 62 SITE PLANNING 3 Cr. - 80 Hrs.

Theories, methods and equipment for the measurement of distances, angles, differences in elevation; theory of error; computations; adjustment of data; mapping application of surveying methods to construction, boundaries; emphasis on production and interpretation of maps for selection of sites, planning of subdivisions, preparation of master plans; examination of sites for buildings; elements of architectural earth sculpture, water, subsurface conditions, landscaping.

AT 63 DESIGN II 6 Cr. - 288 Hrs.

Problems of differential space organizations; specialized spacial forms; relationship of space, form, structure, equipment, light; applications of elements of detailing; design of load bearing and curtain walls relating to total design; problems of tall buildings, building groups, associated site planning; architectural character and aesthetics; correlation of design with associated methods of construction; analysis, development of programs, collaborative work; advanced problems of form, visual expression; emphasis on methods of work; presentation of architectural ideas by preliminary drawings; working drawings; models.

AT 64 ADVANCED DESIGN I 2-8 Cr. - 96-384 Hrs.

Continuation in the learning of the design process; individual projects to develop student's ability to coordinate the design concept with construction.

AT 65 ADVANCED DESIGN II 2-8 Cr. - 96-384 Hrs.

Continuation of AT 64

AT 71 SEMINAR 1 Cr. - 16 Hrs.

Study of architectural ideas, theories, current problems; nature of architect as leader; human activity; relation to man's physical, social, intellectual and spiritual nature; influence of tradition, science, technology.

AT 72 PROFESSIONAL ADMINISTRATION AND CONTRACT DOCUMENTS 2 Cr. - 32 Hrs.

Architectural registration, professional organization, ethics; forms of architectural service; contract law; bonds; liens; codes; insurance; bidding procedures; specification writing; supervision and administration of construction operation.

AT 73 SEMINAR 1 Cr. - 16 Hrs.

Continuation of AT 72 Seminar.

CS 02 TECHNICAL COMPUTER PROGRAMMING

For course description, see Computer Science Department, page 110.

CS 26 APPLIED TECHNICAL PROGRAMMING

For course description, see Computer Science Department, page 111.

CT 10 INTRODUCTORY SURVEYING 2 Cr. - 64 Hrs.

Introduction to surveying; use and care of instruments; simple surveys with compass, transit, level, and tape.
Prerequisites: High school trigonometry, algebra and geometry.

CT 11 ENGINEERING DRAWING 5 Cr. - 208 Hrs.

Use of instruments; lettering; geometric construction; orthographic projection; sectioning; dimensioning; auxiliary views; isometric drawings; topographic maps; logical contouring; plans and profiles; methods of plotting; structural drawing.

CT 12 ELEMENTARY CARTOGRAPHY 3 Cr. - 80 Hrs.

History of mapping; map properties; coordinates and scales; determination of direction; map projections; contours and profiles; map design; map compilation; interpretation of topographic maps.

CT 20 PLANE SURVEYING 4 Cr. - 160 Hrs.

Theory and practice of plane surveying; traverses and elementary triangulation; differential and reciprocal leveling; stadia and construction surveys; plane table surveys.
Prerequisite: CT 10

CT 21 CARTOGRAPHIC TECHNIQUES 3 Cr. - 112 Hrs.

Manuscript compilations; scribing; photographic color separation; typography; reproduction and processing.
Prerequisite: CT 12

CT 30 ROUTE SURVEYING 4 Cr. - 160 Hrs.

Highway curves (horizontal and vertical); plus and offset; X-sections; field astronomy; route location.
Prerequisite: CT 10

CT 31 ENGINEERING TECHNOLOGY 4 Cr. - 96 Hrs.

Economics of highway location; design of curves and grades; widening and super-elevation; earthwork; drainage and structures; pavements; construction and maintenance costs of highways; structural drawing; hydrology (precipitation and runoff); contracts and specifications; sanitary technology.
Prerequisite: CT 20

CT 32 STATICS AND STRENGTHS OF MATERIALS 4 Cr. - 64 Hrs.

Basic principles of statics; force systems; moments of inertia of areas. Stress and deformation; engineering materials and properties; shear and moment in beams; stresses in beams; design of beams; deflection of beams; columns.
Prerequisite: TS 21

CT 40 ADVANCED SURVEYING 3 Cr. - 80 Hrs.

Theory and practice of boundary surveys; city surveys; mine surveys; hydrographic surveys and stream gaging; bridge surveys; survey control, and state coordinate systems; public land surveys; precise leveling and triangulation.
Prerequisite: CT 30

CT 41 ENGINEERING TECHNOLOGY 3 Cr. - 112 Hrs.

Highway location and design project; traffic analysis and survey; urban planning maps; sub-division design; land planning; transportation planning.
Prerequisite: CT 31

CT 42 STRUCTURES 4 Cr. - 64 Hrs.

Theory and design of concrete, wood and steel structures.

CT 43 PHOTOGRAMMETRY 4 Cr. - 96 Hrs.

Use and application of aerial photographs; mapping by photogrammetric methods; geometry of aerial photographs; aerial triangulation; flight planning; mosaics; contracts and specifications.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING 2 Cr. - 64 Hrs.

This course is offered to those students who are enrolled in curricula other than drafting. Use of drawing instruments, lettering, geometric construction, orthographic projection, technical sketching, isometric and oblique sketches, dimensioning, sections, auxiliary views, threads and fasteners, working drawings and blue print reading.

ED 02 ENGINEERING DRAFTING 2 Cr. - 64 Hrs.

Practical application of drafting to the electrical construction field for both domestic and commercial use; house diagrams with circuit schematics, wiring diagrams and complete bill of material and layout diagrams for public facilities such as the lighting system for a small community. For Electronic Instrumentation students: electronic drafting drawing work such as wiring and circuit diagrams and schematics of control systems.

ED 03 GEARS AND CAMS 2 Cr. - 64 Hrs.

A study of motion transfer through the use of gears and cams.

ED 05 BLUEPRINT READING 3 Cr. - 48 Hrs.

A study of blueprint reading for welders with emphasis on the reading and interpretation of multiview drawings involving dimensions, notes, specifications and welding symbols.

ED 10 BASIC DRAFTING I 4 Cr. - 128 Hrs.

Use of drawing instruments, lettering, geometric construction, orthographic projection, isometric drawings, sectioning, dimensioning, auxiliary views, revolutions and freehand sketching.

ED 11 BASIC DRAFTING II 4 Cr. - 128 Hrs.

Inclusion of screwthreads and fastening devices, working, assembly and installation drawings; study of sheet metal intersections and developments.
Prerequisite: ED 10

ED 12 INDUSTRIAL PROCESSES 2 Cr. - 48 Hrs.

Theories and applications in the principal metal removal, forming, joining and casting processes.

ED 20 GEARS AND CAMS 4 Cr. - 128 Hrs.

A study of power and motion transfer through the use of gears and cams.

ED 21 MECHANISMS 4 Cr. - 128 Hrs.

A study of power and motion transfer through the use of various linkages and mechanisms.

ED 22 DRAFTING AND SKETCHING 3 Cr. - 96 Hrs.

A study of drafting and freehand sketching with emphasis on sketching for those who major in the Industrial Management Program. This course includes: geometrical construction, shape description, screwthreads and other fastening devices, working drawings, assembly drawings, gears, cams, and interpreting actual plant layouts and production line drawings related to the installation and operation of equipment.

ED 30 DETAIL AND ASSEMBLY DRAWINGS 4 Cr. - 128 Hrs.

Making of accurate working drawings, sub-assemblies and assemblies; drawing details from sketches and other engineering specifications.
Prerequisite: ED 11

ED 31 APPLIED DRAFTING TECHNIQUES 4 Cr. - 128 Hrs.

Making of complicated detail drawings from industrial castings; comprehensive study of close tolerance dimensioning.
Prerequisite: ED 30

ED 40 ADVANCED DETAIL I 4 Cr. - 128 Hrs.

Redesigning of industrial castings into weldments and making of detail drawings from engineering layouts; comprehensive study of welding, piping and layouts.
Prerequisite: ED 31

ED 41 ADVANCED DETAIL II 4 Cr. - 128 Hrs.

Advanced study and application of drafting using layouts from industry to make detail, assembly and sub-assembly drawings; included are geometric tolerancing, true position dimensioning and surface finish specifications in accordance with industrial and military standards.
Prerequisite: ED 40

ED 50 ADVANCED DETAIL AND DESIGN 4 Cr. - 128 Hrs.

Study and application of machine elements, the making of layouts required in the design of a simple machine, and the completion of the assembly and detail drawings, all in accordance with industrial requirements.
Prerequisite: ED 41

ED 51 DESCRIPTIVE GEOMETRY 3 Cr. - 112 Hrs.

Principles of orthographic projection; fundamental problems involving the relationship of points, lines and planes in space; intersecting lines and planes; graphical computations for bearings and slopes of lines, strike and dip of planes; solution of problems of intersection of planes and solids.
Prerequisites: High school background of drafting or MD 01

GA 10 REPRODUCTION PROCESSES I

For course description, see Printing Department, page 196.

GA 20 REPRODUCTION PROCESSES II

For course description, see Printing Department, page 196.

GA 30 REPRODUCTION PROCESSES III

For course description, see Printing Department, page 197.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GM 30 GEOMETRY-TRIGONOMETRY

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

MD 15 DRAFTING I 208 Hrs.

Mechanical drawing; lettering; geometric drawing; orthographic projection; pictorial projections; sectioning; dimensioning; auxiliary views; revolutions; free-hand sketching; reproduction processes.

MD 16 DRAFTING II 208 Hrs.

Threads, fasteners, springs; working drawings; assembly, detail and installation drawings.
Prerequisite: MD 15

MD 25 DRAFTING III 192 Hrs.

Study of sheet metal intersections and developments, cones, transition pieces, irregular shapes; introduction to making accurate detail drawings from industrial machine parts.
Prerequisite: MD 16

MD 26 DRAFTING IV 192 Hrs.

Making of accurate detail drawings from complicated industrial machine parts, conforming to industrial and military standards; comprehensive study of close tolerance dimensioning.
Prerequisite: MD 25

MD 35 DRAFTING V 208 Hrs.

Study of power transmissions, pulleys, sheaves, gears, sprockets.
Prerequisite: MD 26

MD 36 DRAFTING VI 208 Hrs.

Study of the mechanisms used to create motion in machines, cams, linkages.
Prerequisite: MD 35

MD 45 DRAFTING VII 208 Hrs.

Redesigning of industrial castings into weldments; making of detail drawings from engineering layouts; comprehensive study of welding, piping and layout drawings.

MD 46 DRAFTING VIII 208 Hrs.

Advanced study and application of drafting using industrial layouts to make detail, assembly, sub-assembly drawings; geometric tolerancing; true position dimensioning; surface finish specifications in accordance with industrial and military standards.
Prerequisite: MD 45

MD 55 DRAFTING IX 208 Hrs.

Making layout of a simple machine; completion of the necessary drawings according to industrial practices.
Prerequisite: Approval of Department Head
NOTE: Courses to be taken in sequence as listed unless approval is granted by the Department Head.

TD 21 TOOL DRAFTING 4 Cr. - 128 Hrs.

Study of the transition between drafting and tool design,

covering drawing techniques, purchased parts, standards of shop drawings, material lists, selection of materials and heat treating of metals.
Prerequisite: ED 11

TD 30 CUTTING TOOL DESIGN 4 Cr. - 128 Hrs.

Design of single-edge cutting tools, boring bars and multiple-edge cutting tools.

TD 31 FIXTURE DESIGN 4 Cr. - 128 Hrs.

Design of leaf and tumble jugs, plain and index milling fixtures, vise jaws, chuck jaws, lathe fixtures, and adaptor plates.

TD 40 GAGE DESIGN AND PROGRAMMING 4 Cr. - 128 Hrs.

Writing of programs for point to point and contouring tape controlled machines; design of plug, snap, ring, flush pin depth, length and indicating gages.
Prerequisites: ED 10 and 11

TD 41 DIE DESIGN 4 Cr. - 128 Hrs.

Designing of cutting, forming, drawing, and cavity dies; simple progressive and compound arrangements.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TI 21 PERSPECTIVE DRAWING 4 Cr. - 128 Hrs.

Instruction in one-point or parallel perspective, two-point or angular perspective; projection method and measuring plan emphasized.

TI 23 RENDERING I 4 Cr. - 128 Hrs.

Shading of illustrations using various types of water base pigments to produce wash and opaque illustrations of geometric constructions.

TI 31 AXONOMETRIC DRAWING 4 Cr. - 128 Hrs.

Instruction in isometric, dimetric and trimetric projection; instruction in use of some popular industrial drawing aids.

TI 33 COLOR 2 Cr. - 64 Hrs.

Color theory and training in the use and application of color; full color rendering of products; use of flat colors and color aids.

TI 34 RENDERING II 4 Cr. - 128 Hrs.

Continuation of Rendering I; fundamental training and skills required to produce continuous tone drawings with airbrush.

TI 35 TECHNICAL ILLUSTRATION I 6½ Cr. - 208 Hrs.

Instruction in one-point or parallel perspective, two-point or angular perspective; projection and measuring plan methods.

TI 36 TECHNICAL ILLUSTRATION II 6½ Cr. - 208 Hrs.

Instruction in isometric, dimetric and trimetric projections; use of some popular industrial drawing aids.

TI 40 ILLUSTRATION PRACTICE 4 Cr. - 128 Hrs.

Training in rendering art for technical manuals and related art, combinations for rendering learned techniques, preparation of presentation folio.

TI 41 TECHNICAL DRAWING 4 Cr. - 128 Hrs.

Continuation of perspective and axonometric drawing course; production of illustration to meet employment requirements including assembly, exploded and cut-away views of mechanical objects.

TI 42 LAYOUT AND DESIGN 2 Cr. - 64 Hrs.

Basic fundamentals of layout; creation of sketches, designs, thumbnail sketches, comprehensives, with emphasis on technique, structure, mechanics, awareness, and communication.

TI 45 TECHNICAL ILLUSTRATION III 208 Hrs.

Training in preparing illustrations for publication in technical manuals, line and continuous tone drawings employing

various types of pens and ink, commercial lettering and shading sheets.

TI 46 TECHNICAL ILLUSTRATION IV 208 Hrs.

Converting complex blueprints to three-dimensional isometric dimetric, trimetric and perspective drawings; assembly, exploded, and cut-away views; use of industrial drawing aids—perspective boards, axonometric grids, and special lettering equipment.

TI 55 TECHNICAL ILLUSTRATION V 208 Hrs.

Special problems in advanced work in all phases of technical illustration in accordance with industrial requirements; setting up complete drawing system at any desired angle and producing three-dimensional protractor, grid and scale for it.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TM 31 CALCULUS I

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 22 INTRODUCTION TO METALLURGY

For course description, see Science Department, page 199.

TS 31 PHYSICS-ELECTRICITY & MAGNETISM

For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT & LIGHT

For course description, see Science Department, page 199.

TT 01 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 176.

TT 02 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 176.

TT 03 BASIC MACHINE SHOP

For course description, see Machine Shop Department, page 176.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ALGEBRA 101 - COLLEGE ALGEBRA 3 Cr. - 48 Hrs.

Fundamentals of algebra, linear functions, exponents and radicals, quadratic equations, ratio and proportion, probability, mathematical induction, binomial theorem, inequalities, complex numbers, theory of equations and determinants.
Prerequisites: Two units of high school mathematics

COMPOSITION 101 3 Cr. - 48 Hrs.
ENGLISH COMPOSITION

Basic composition involving language structure, rhetorical principles, readings in expository prose, and orderly, clear writing.

ECONOMICS 201 3 Cr. - 48 Hrs.
INTRODUCTION & ANALYSIS - MACRO

Economic concepts, principles and institutions. Methods of analysis.

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

SPEECH 211 - FUNDAMENTALS OF SPEECH 3 Cr. - 48 Hrs.

Basic physiology of speech. Oral reading; composing and delivery of expository speeches for different types of audiences.

TRIGONOMETRY 102 3 Cr. - 48 Hrs.
COLLEGE TRIGONOMETRY

Trigonometric functions, use of tables, solution of right and and oblique triangles, radian measure, fundamental identities, graphical representation of trigonometric functions, inverse functions and solution of equations.
Prerequisite: Math 101

COURSE DESCRIPTIONS / *economics department*

HARVEY H. KUHNS, JR., Department Chairman

EC 02 ECONOMICS 3 Cr. - 48 Hrs.

Fundamentals of American economy: attributes of capitalism; production, distribution and consumption of goods and services; consumer demand; money and banking in United States; employment; labor problems; personnel policies in modern industry.

EC 11 ECONOMICS 3 Cr. - 48 Hrs.

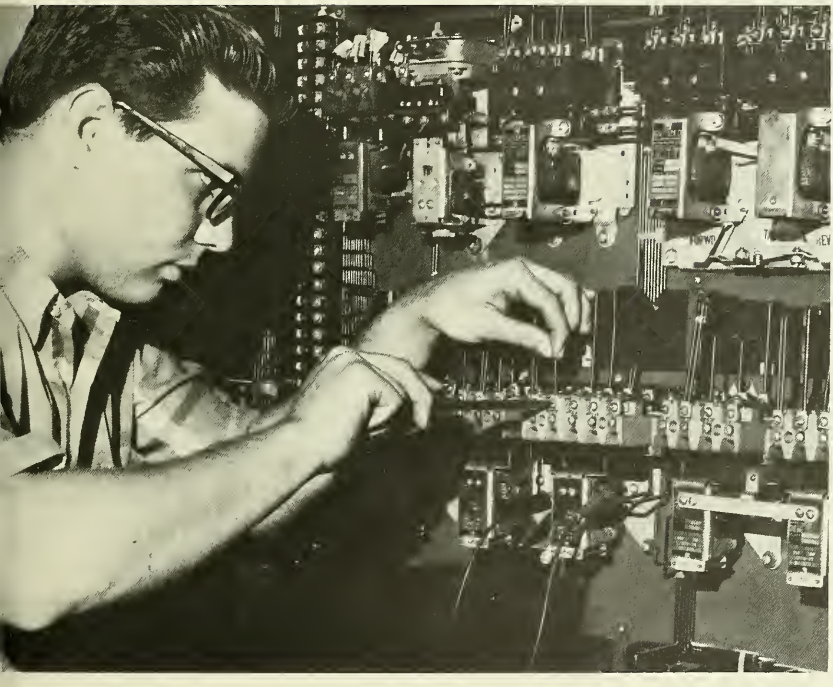
Basic principles of our economy: American capitalistic system; business cycles; investments; stock market operation; personnel policies and procedures; job procurement.

EC 46 ECONOMICS 3 Cr. - 48 Hrs.

Group problems involving national economy; labor laws, financial policies, and personnel; income, employment, business fluctuations, and economic analysis.

ELECTRICAL DEPARTMENT / Career Programs

JOHN W. HOUGH, Chairman



Associate Degree

EL Electrical Technology

Certificate

EM Electric Motor Rewinding and Repairing

EW Electrical Construction

ELECTRICAL TECHNOLOGY (EL)

Associate Degree / Two Years

If you enjoy working with electronics equipment or electrical machinery, you may be interested in a career as an electrical engineering technician. Your degree program will stress electrical knowledge including fundamental theory, circuits, industrial electronics, electrical machinery and electrical construction. You will also be given courses in mathematics, science, and technical communications to enhance your vocational opportunities.

Types of Jobs: Electrical engineering and electrical laboratory technician; electrical engineer's assistant; electrical construction apprentice; industrial maintenance technician; construction electrician; trouble shooter for electrical equipment manufacturers.

Job Opportunities: Unlimited and excellent starting salaries and opportunities for industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EL 11	DC Fundamentals	5	5	3	128
EL 12	Basic Wiring Lab	2	0	6	96
EL 18	Accident Prevention	2	2	0	32
TE 11	English Composition	3	3	0	48
TM 13	Algebra	4	4	1	80
	Physical Education 101	1	0	2	32
		17	14	12	416

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EL 21	AC Fundamentals	4	5	4	144
ED 01	Mechánical Drawing	2	1	3	64
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
EI 32	Basic Electronics	4	4	3	112
	Physical Education 102	1	0	2	32
		18	17	13	480

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EL 31	Basic Electrical Construction Lab	2	0	6	96
EL 34	Electric Motor Control	3	3	3	96
EL 35	Residential Blueprint & Code	3	3	1	64
EI 33	Basic Electronics Lab	2	0	6	96
ED 02	Engineering Drafting	2	1	3	64
TS 21	Physics-Mechanics	4	4	0	64
		16	11	19	480

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EL 41	Commercial & Industrial Blueprint	3	4	0	64
EL 46	Electrical Equipment Repairs	2	2	3	80
EL 44	Advanced Electrical Construction	3	1	8	144
EL 45	Advanced Electrical Theory	3	3	3	96
EC 11	Economics	3	3	0	48
TS 32	Physics-Heat & Light	3	3	0	48
		17	16	14	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

ELECTRIC MOTOR REWINDING AND REPAIRING (EM)

Certificate / Two Years

This course will teach you to rewind electric motors and to repair electrical machinery, portable appliances, and electrical equipment used in industry. To insure your efficiency in this field, the program studies include fundamentals of electrical theory, circuits, and industrial control wiring.

Types of Jobs: Employment in commercial rewinding shops, appliance repair fields, electrical maintenance industries.

Job Opportunities: The ever-increasing use of motors and appliances creates constant job openings. The trade should also be considered by men who need new job training because of automation or disability. Starting salaries range from good to excellent.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EW 11	DC Fundamentals	5	5.5	168
EW 12	Basic Wiring Lab	0	6	96
EW 18	Accident Prevention	2	0	32
EM 18	Motor Rewinding	0	6.5	104
GM 10	Arithmetic or GM 20	3	0	48
TE 01	Communications I or TE 11	3	0	48
		13	18.0	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EM 25	Machine Shop Practice	0	8	128
GM 20	Algebra or GM 30	3	0	48
TE 02	Communications II or TE 21	3	0	48
EW 21	AC Fundamentals	5	5	160
EM 28	Motor Rewinding	0	7	112
	Physical Education 101	0	2	32
		11	22	528

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GS 20	Physical Science or TS 21	3	0	48
EW 34	Electric Motor Control	2	3	80
EW 35	Residential Blueprint & Code	4	0	64
EM 38	Motor Rewinding	0	18	288
		9	21	480

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EC 02	Economics or EC 11	3	0	48
EW 41	Commercial & Industrial Blueprint	4	0	64
EM 45	Household Appliance Repairs	0	6	96
EW 46	Electrical Equipment Repairs	1	3	64
EM 48	Advanced Motor Rewinding	0	13	208
		8	22	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

ELECTRICAL CONSTRUCTION (EW)

Certificate / Two Years

If you have the desire and aptitudes to work in the electrical trades, but do not want to get involved in the more theoretical aspects of them, this is the program for you. You will study some mathematics, science, and communications skills, but program stress is placed on the manual skills which you will need to install wiring and electrical equipment in buildings with the aid of blue prints.

Types of Jobs: Electrical construction union apprentice, industrial maintenance and construction electrician; self-employment in residential and commercial wiring and in electrical shops; electrical tester or inspector; power company employee.

Job Opportunities: Unlimited with good to excellent salaries and opportunities for advancement and industry-financed education.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
EW 11	DC Fundamentals	5	5.5	168
EW 12	Basic Wiring Lab.	0	6	96
EW 18	Accident Prevention	2	0	32
EM 18	Motor Rewinding	0	6.5	104
		13	18	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TE 02	Communications II or TE 21	3	0	48
GM 20	Algebra or GM 30	3	0	48
EW 21	AC Fundamentals	4	5	160
EW 32	Basic Electronics	4	0	64
EM 28	Motor Rewinding	0	6	112
ED 01	Mechanical Drawing	1	3	64
	Physical Education 101	0	2	32
		15	16	528

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GS 20	Physical Science or TS 21	3	0	48
EW 31	Basic Electrical Construction Lab	0	9	144
EW 33	Basic Electronics Lab	0	6	96
EW 34	Electric Motor Control	2	3	80
EW 35	Residential Blueprint & Code	4	0	64
ED 02	Engineering Drafting	1	3	64
		10	21	496

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EW 41	Commercial & Industrial Blueprint	4	0	64
EW 45	Electrical Machinery	2	2	64
EW 44	Advanced Electrical Construction	1	8	144
EW 46	Electrical Equipment Repairs	2	2	64
EM 47	Motor Rewinding and Repairs	0	6	96
EC 02	Economics or EC 11	3	0	48
		12	18	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *electrical department*

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

ED 02 ENGINEERING DRAFTING

For course description, see Drafting Department, page 124.

EI 32 BASIC ELECTRONICS 4 Cr. - 112 Hrs.

Study of electron tube and semiconductor principles, characteristics and problems; lecture-demonstration sessions: gaseous rectifiers, silicon controlled rectifiers, phototubes, saturable reactors, electronic power supplies, amplifiers, oscillators, detectors, motor control circuits, and servo-mechanisms.

EI 33 BASIC ELECTRONICS LAB 2 Cr. - 96 Hrs.

Introduction to shop techniques starting with proper use of hand tools, wiring, soldering and cable lacing; construction and testing of basic electronic circuits. Use of test equipment such as multimeters, vacuum tube voltmeters, oscilloscopes and signal generators; documentation of test data.

EL 11 DIRECT CURRENT FUNDAMENTALS 5 Cr. - 128 Hrs.

Comprehensive study of basic electrical laws, formulas and terms; batteries; electro-statics; electrical instruments and direct current machinery. Emphasis on participation in operation of laboratory equipment.

EL 12 BASIC WIRING LAB 2 Cr. - 96 Hrs.

Lab course in tools and materials of trade; proper use and care of hand tools; instruction in wiring of these basic circuits: residential lighting and receptacle circuits, low voltage switching and control circuits; use of electrical underwriters rules in color coding.

EL 18 ACCIDENT PREVENTION 2 Cr. - 32 Hrs.

Principles of accident prevention in industry and electrical safety procedures in all human activities; lifesaving techniques.

EL 21 ALTERNATING CURRENT FUNDAMENTALS 4 Cr. - 144 Hrs.

Laws, formulas, and fundamentals of alternating electricity; machinery; lab projects; hook-up of electrical equipment and meters.

EL 31 BASIC ELECTRICAL CONSTRUCTION LAB 2 Cr. - 96 Hrs.

Mounting of conduit and other electrical raceways for installation of switches, receptacles, lights, heating equipment motors and control equipment; planning electrical construction jobs.

EL 34 ELECTRIC MOTOR CONTROL 3 Cr. - 96 Hrs.

Reading and drawing of control circuit diagrams; hooking up direct current and alternating current motor control equipment; study of principles of rotating and magnetic amplifiers and static control.

EL 35 RESIDENTIAL BLUEPRINT AND CODE 3 Cr. - 64 Hrs.

Planning and drawing of residential wiring systems; calculating size and number of circuits needed for electrical heating calculations and remote control.

EL 41 COMMERCIAL AND INDUSTRIAL BLUEPRINT 3 Cr. - 64 Hrs.

Blueprint reading and circuit planning of electrical construction in factories and commercial buildings; stress on engineering of circuits by use of mathematics, electrical code, tables.

EL 44 ADVANCED ELECTRICAL CONSTRUCTION 3 Cr. - 144 Hrs.

Use of electrical construction blueprints for large buildings; duties of the electrical construction technician; phases of electrical work for journeyman trade.

EL 45 ADVANCED ELECTRICAL THEORY 3 Cr. - 96 Hrs.

Solution of network problems and problems involving charge and discharge of capacitors; rotating vectors and other problems involving alternating electricity.

EL 46 ELECTRICAL EQUIPMENT REPAIRS 2 Cr. - 80 Hrs.

Emphasis on preventative maintenance; repairs, adjustments and replacement of parts on various kinds of electrical equipment; use of meters in analysis of electrical faults; trouble shooting techniques.

EM 18 MOTOR REWINDING 104 Hrs.

Electrical and mechanical features of various single phase motors; lab work developing knowledge and skill in rewinding and repairing single phase motors.

EM 25 MACHINE SHOP PRACTICE 128 Hrs.

Use of various mechanical tools: drill press, bench grinder, hydraulic press and engine lathe.

EM 28 MOTOR REWINDING 112 Hrs.

Emphasis on skill and speed in rewinding and assembling single phase motors; repairing or rewinding of one or more types of motor armatures.

EM 38 MOTOR REWINDING 288 Hrs.

Rewinding, repairing and assembling of three-phase motors, direct-current armatures, field coils.

EM 45 HOUSEHOLD APPLIANCE REPAIR 96 Hrs.

Replacement of cords and heating elements, testing and adjusting of thermostats on electric irons; repair of other small household appliances.

EM 47 MOTOR REWINDING AND REPAIRS 96 Hrs.

Development of additonal skill and knowledge in rewinding and repair of single-phase and three-phase motors.

EM 48 ADVANCED MOTOR REWINDING 208 Hrs.

Emphasis on speed, skill and knowledge required for rewinding and repairing all types of motors.

EW 11 DC FUNDAMENTALS 168 Hrs.

Study of basic electrical laws, electrical terms, batteries, electro-statics, electrical meters and instruments, direct-current machinery.

EW 12 BASIC WIRING LAB 96 Hrs.

Lab course including tools and materials of the trade; proper use and care of hand tools; soldering and splicing of wires; instruction in the wiring of basic circuits: bell and annunciator circuits, residential lighting and receptacle circuits, low voltage switching and control circuits; wiring of various kinds of fluorescent lights.

EW 18 ACCIDENT PREVENTION 32 Hrs.

Study of safety precautions, accident preventions, and life-saving techniques in the electrical areas of industry.

EW 21 AC FUNDAMENTALS 160 Hrs.

Study of nature of alternating current electricity as related to residential, commercial and industrial power use; laws and formulas needed for the solution of problems in the use of AC power; study of AC machinery; lab work for demonstrating AC electrical principles; practical experience in hookup of equipment and instruments.

EW 31 BASIC ELECTRICAL CONSTRUCTION LAB 144 Hrs.

Experience in the use and installation of electrical materials: house wiring circuits, wiring boxes of many kinds, armored cable, wire mold and romex, fluorescent and incandescent light switches and receptacle circuits.

EW 32 BASIC ELECTRONICS 64 Hrs.

Study of the principles and the use of tubes and diodes in industrial electronic equipment such as rectifiers and motor control circuits.

EW 33 BASIC ELECTRONICS LAB 96 Hrs.

Construction of basic electronic circuits; proper use of hand tools, wiring and electronic components, soldering and cable lacing; techniques of using multimeters and other testing equipment.

EW 34 ELECTRIC MOTOR CONTROL 80 Hrs.

Lab assignments involving wiring of starting and control equipment for DC and AC motors including start-stop, forward-reverse and jogging push button stations, speed controls, plugging and dynamic braking circuits; hook-up of various types of servo motors to show application in industry.

EW 35 RESIDENTIAL BLUEPRINT AND CODE 64 Hrs.

Study of residential wiring circuits, low voltage remote control switching and electric heating; study of the National Electrical Code book and its provisions dealing with residential and other types of wiring.

EW 41 COMMERCIAL AND INDUSTRIAL BLUEPRINT 64 Hrs.

Study of electrical construction for industry and commerce and relevant electrical code.

EW 44 ADVANCED ELECTRICAL CONSTRUCTION 144 Hrs.

Practice in installation of rigid conduit and other electrical wireways; pulling in and wiring of motor controllers and other electrical equipment; study of blueprints of large electrical construction jobs.

EW 45 ELECTRICAL MACHINERY 64 Hrs.

Review of electrical fundamentals machinery with lab work designed to increase skill in hooking up electrical machinery and meters.

EW 46 ELECTRICAL EQUIPMENT REPAIRS 64 Hrs.

Repair and adjustment of motor contractors; push button stations and relays; rewinding and phasing of small transformer coils, replacing of faulty rectifier plates; repairing lab equipment and other electrical equipment belonging to the college.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 10 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT & LIGHT

For course description, see Science Department, page 199.

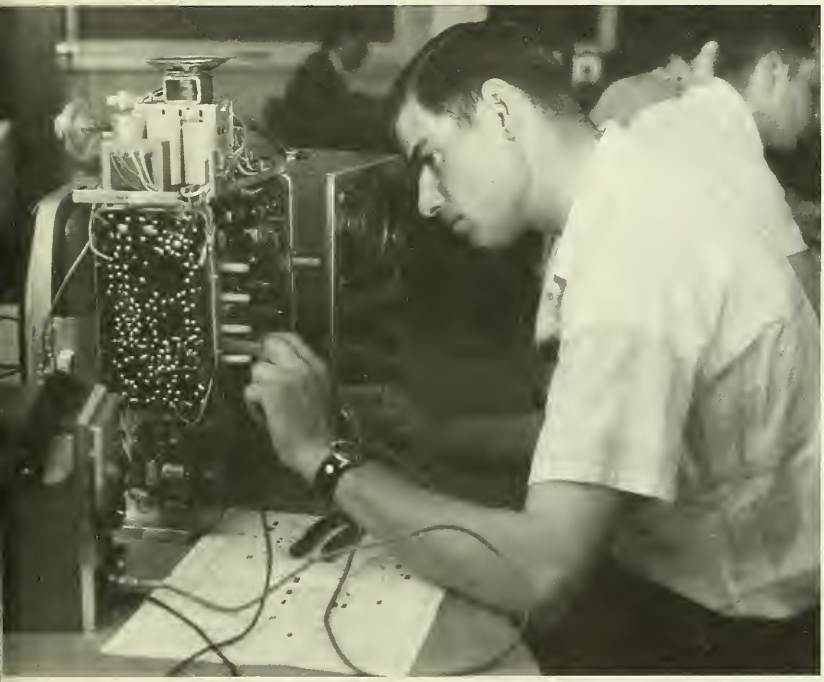
RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

ELECTRONICS DEPARTMENT / Career Programs

CLINTON B. DAWES, Chairman



Associate Degree

EI Electrical Instrumentation Technology

ET Electronics Technology

ELECTRICAL INSTRUMENTATION TECHNOLOGY (EI)

Associate Degree / Two Years

Designed to meet industrial demands, the Electrical Instrumentation Program stresses electrical and electronic fundamentals as well as mathematics, science, and the principles of pneumatic and hydraulically operated equipment. Graduation from this program will qualify you as a technician capable of calibrating, repairing, and operating all types of electrical instruments for tests and plant operations.

Job Opportunities: Good, with excellent starting salaries. Possibilities exist for continued education through company sponsorship.

Types of Jobs: Engineering aide; instrumentation service specialist; laboratory, research, electrical or electronic technician.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 11	Basic Electricity for Electronics	5	5	0	80
ET 12	Basic Electrical Lab for Electronics	3	0	9	144
ET 14	Electrical Circuit Analysis	3	3	0	48
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
		18	15	10	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 21	Basic Electronics	5	5	0	80
ET 22	Basic Electronics Lab	3	0	9	144
ET 23	Basic Electronics Circuit Analysis	3	3	0	48
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
		18	15	10	400

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EI 31	Basic Instrumentation	3	3	1	64
EI 33	Basic Electronics Lab for Instrumentation	2	0	6	96
EI 35	Basic Instrumentation Lab	1	0	3	48
ET 35	Intermediate Electronics	5	5	0	80
TS 21	Physics-Mechanics	4	4	0	64
ED 01	Mechanical Drawing	2	1	3	64
	Physical Education 101	1	0	2	32
		18	13	15	448

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EI 41	Electronic Instrumentation	3	3	1	64
EI 42	Electronic Instrumentation Lab	2	0	6	96
EI 45	Calibration and Standardization	1	0	3	48
EL 34	Electrical Motor Control	3	3	3	96
TS 32	Physics-Heat and Light	3	3	0	48
EC 11	Economics	3	3	0	48
	Physical Education 102	1	0	2	32
		16	12	15	432

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

ELECTRONICS TECHNOLOGY (ET)

Associate Degree / Two Years

The Electronics Technology Program will prepare you to apply basic electronics theory to current practices, and it will help you to understand future developments as they take place. Through practical laboratory work with modern electronics equipment, you will learn to assist electrical engineers in the design, construction, installation, and testing of all kinds of electronic equipment.

Types of Jobs: Electronics engineering technician, electronic instrument technician, electronic laboratory technician, industrial electronic technician, production technician, and technical writer.

Job Opportunities: Excellent with good starting salaries and fringe benefits including opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 11	Basic Electricity for Electronics	5	5	0	80
ET 12	Basic Electrical Lab for Electronics	3	0	9	144
ET 14	Electrical Circuit Analysis	3	3	0	48
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
		18	15	10	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 21	Basic Electronics	5	5	0	80
ET 22	Basic Electronics Lab	3	0	9	144
ET 23	Basic Electronics Circuit Analysis	3	3	0	48
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
		18	15	10	400

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 35	Intermediate Electronics	5	5	0	80
ET 36	Intermediate Electronics Lab	3	0	9	144
ET 33	Intermediate Electronics Circuit Analysis	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
ED 01	Mechanical Drawing	2	1	3	64
	Physical Education 101	1	0	2	32
		18	13	14	432

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
ET 45	Advanced Electronics	5	5	0	80
ET 46	Advanced Electronics Lab	3	0	9	144
TS 32	Physics-Heat and Light	3	3	0	48
EC 11	Economics	3	3	0	48
	*Elective	1-3	0-3	0-3	48-64
	Physical Education 102	1	0	2	32
		16-18	11-14	11-14	400-432

*Electives: *BS 09 Typewriting; CS 02 Technical Computer Programming; ET 44 Advanced Circuit Analysis; EI 45 Calibration and Standardization; TM 31 Calculus I.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

COURSE DESCRIPTIONS / *electronics department*

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 02 TECHNICAL COMPUTER PROGRAMMING

For course description, see Computer Science Department, page 110.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

EI 31 BASIC INSTRUMENTATION 3 Cr. - 64 Hrs.

Lecture-demonstration course in principles of electro-mechanical instruments; basic information on primary sensing elements; indicators, recorders, controllers, final control elements and mechanisms; variables such as temperature, pressure, liquid level, flow rate; problems involving instrumentation fundamentals.

EI 33 BASIC ELECTRONICS LAB FOR INSTRUMENTATION 2 Cr. - 96 Hrs.

Introduction to special shop techniques necessary for the instrumentation trade, including specialized types of wiring, soldering and cable lacing; construction of electronic circuits; testing with equipment such as multimeters, vacuum tube voltmeters, oscilloscopes and signal generators; documentation of test data.

EI 35 BASIC INSTRUMENTATION LAB 1 Cr. - 48 Hrs.

Introduction to pneumatic and hydraulic control devices; experiments in proper application, adjustment and repair of process control instruments, including indicators, recorders, and controllers.

EI 41 ELECTRONIC INSTRUMENTATION 3 Cr. - 64 Hrs.

Advanced course in measuring principles, transmission and telemetering, control systems, analytical instruments, potentiometer measurements and principles of closed-loop servo systems; problems involving dynamic limitations of electronic systems, such as control lag, overshoot, stability and conversion of measured variables.

EI 42 ELECTRONIC INSTRUMENTATION LAB 2 Cr. - 96 Hrs.

Application of control systems design in the laboratory; designing, building, testing separate control devices; ultimately setting up complete systems and logging data from systems; repair and maintenance procedures, applying trouble shooting techniques.

EI 45 CALIBRATION AND STANDARDIZATION 1 Cr. - 48 Hrs.

Lecture-demonstration-practice course involving principles of primary, secondary, shop standards; use of laboratory-type console; calibration of measuring instruments; periodic calibration of all measuring and control instruments.

EL 34 ELECTRICAL MOTOR CONTROL

For course description, see Electrical Department, page 134.

ET 11 BASIC ELECTRICITY FOR ELECTRONICS 5 Cr. - 80 Hrs.

First of a four semester sequential course in electricity and electronics theory including structure of matter, basic atomic theory, DC and AC, Ohm's Law, Kirchoff's Law; electrical calculations and formulas; magnetism and electromagnetism; vector analysis; resonance; electrical filters; measuring instruments.

ET 12 BASIC ELECTRICAL LAB FOR ELECTRONICS 3 Cr. - 144 Hrs.

First of four semester sequential courses in applied electronic concepts, including basic manipulative skills such as soldering, use of hand tools and small power tools, component testing and identification, testing, wiring basic electrical and electronic circuits.

**Prerequisite or Corequisite: ET 11*

ET 14 ELECTRICAL CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

First of three or four semester sequential courses in analysis, tracing, and problem solving including close analysis of AC and DC circuits. Special emphasis on circuit tracing and solution of electrical problems using mathematical approaches.

**Prerequisite or Corequisite: ET 11*

ET 21 BASIC ELECTRONICS 5 Cr. - 80 Hrs.

Continuation of ET 11; basic theory covering vacuum tubes and solid state devices as well as circuits using these devices; advanced electrical and electronic measuring instruments.

**Prerequisites: ET 11, TM 13*

ET 22 BASIC ELECTRONICS LAB 3 Cr. - 144 Hrs.

Continuation of ET 12; construction and testing of vacuum tube and solid state systems such as amplifers, detectors, etc.; theory and operation of laboratory testing equipment including gain, distortion, frequency response and power output measurements.

**Prerequisite: ET 12*

**Prerequisite or Corequisite: ET 21*

ET 23 BASIC ELECTRONICS CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Continuation of ET 14; complete analysis of electronic circuits featuring design and component selections as well as more advanced circuit checking and testing.

**Prerequisite: ET 14*

**Prerequisite or Corequisite: ET 21*

ET 33 INTERMEDIATE ELECTRONICS CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Continuation of ET 23; closer analysis of more complicated circuitry including pulse techniques and pulse generators; blocking oscillators; multivibrators and shaping networks; intergrating and differentiating networks.

**Prerequisite: ET 23*

**Prerequisite or Corequisite: ET 31*

ET 35 INTERMEDIATE ELECTRONICS 5 Cr. - 80 Hrs.

Continuation of ET 21; detailed study of vacuum tube and solid state circuits and devices such as oscillators; transmitters; receivers; modulation systems; stereo systems; microwaves and wave propogation.

**Prerequisite: ET 21*

ET 36 INTERMEDIATE ELECTRONICS LAB 3 Cr. - 144 Hrs.

Continuation of ET 22; construction and testing of more sophisticated vacuum tube and solid state equipment such as transmitters; FM and AM receivers; written laboratory reports.

**Prerequisite: ET 22*

**Prerequisite or Corequisite: ET 35*

ET 44 ADVANCED CIRCUIT ANALYSIS 3 Cr. - 48 Hrs.

Close analysis of waves and pulses as found in color television; alignment of electronic circuits, including color television.
**Prerequisite: ET 33*
**Prerequisite or Corequisite: ET 45*

ET 45 ADVANCED ELECTRONICS 5 Cr. - 80 Hrs.

Continuation of ET 35; complete study of cathode ray tubes as found in television cameras and receivers; television receivers; analysis of electrical wave shapes using the television signal as a source.
**Prerequisite: ET 35*

ET 46 ADVANCED ELECTRONICS LAB 3 Cr. - 144 Hrs.

Continuation of ET 33; further analysis of television receivers; wide band oscilloscopes; laboratory equipment; visual alignment of circuits, etc.
**Prerequisite: ET 36*
**Prerequisite or Corequisite: ET 45*

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TM 31 CALCULUS I

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT AND LIGHT

For course description, see Science Department, page 199.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

**Applies to EI or ET Program only*

COURSE DESCRIPTIONS / *english department*

CHARLES Q. SIMCOX, Department Chairman

TE 01 COMMUNICATIONS I 48 Hrs.

Intensive instruction in writing and reading.

TE 02 COMMUNICATIONS II 48 Hrs.

Practice in group discussion, critical listening, parliamentary procedure, oral reporting.

TE 11 ENGLISH COMPOSITION 3 Cr. - 48 Hrs.

Development of clear thinking, good organization and accurate self expression in writing.

TE 21 SPEECH 3 Cr. - 48 Hrs.

Organization of oral reports, with emphasis on the fundamentals of speech; practice in leadership techniques and parliamentary procedure.

TE 25 BUSINESS ENGLISH 3 Cr. - 48 Hrs.

Organization and preparation of reports and business letters; emphasis on accuracy, clarity, and effectiveness.

TE 31 INTRODUCTION TO LITERATURE 3 Cr. - 48 Hrs.

Selected readings in classical, European, English, and American literature.
Prerequisite: TE 25 or equivalent

FOOD SERVICE TECHNOLOGY DEPARTMENT / Career Progra

ALBERT L. HUMMEL, Chairman

Associate Degree

FS Food Service Technology

FOOD SERVICE TECHNOLOGY (FS)

Associate Degree / Two Years

If you would like to be a food service supervisor or would like to assist dietitians, this is the program tailored for you. Fundamentals of food preparation, nutrition, organic chemistry, and work direction will be stressed in the program studies. As a graduate of the program, you will be entitled to apply for membership in the Hospital Institution and Educational Food Service Society, an organization recognized by the American Dietetic Association.

Types of Jobs: Food service supervisor, assistant dietitian, supervisory positions in hospitals, nursing homes, child care centers, schools, colleges, and restaurants.

Job Opportunities: Since the position of food service supervisor is relatively new, opportunities are unlimited. There is an urgent, widespread need for qualified people in the field, and advancements are dependent upon individual ability and interest.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
FS 01	Orientation	1	1	0	16
FS 02	Foods I	3	2	3	80
FS 03	Nutrition I	3	3	0	48
TE 11	English Composition	3	3	0	48
CH 01	Chemistry I or Chemistry 101	4	3	3	96
PN 24	Human Physiology	3	3	0	48
	Physical Education 101	1	0	2	32
		18	15	8	368

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
FS 04	Foods II	3	1	6	112
FS 05	Quantity Foods I	3	2	3	80
TM 25	Business Mathematics	3	3	0	48
TE 21	Speech	3	3	0	48
CH 02	Chemistry II or Chemistry 102	4	3	3	96
	Physical Education 102	1	0	2	32
		17	12	14	416

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
FS 06	Nutrition II	3	3	0	48
FS 07	Quantity Foods II	3	1	6	112
FS 08	Chemistry of Foods	4	2	6	128
FS 09	Organization & Management	3	3	0	48
	Psychology 101 - General Psychology	3	3	0	48
		16	12	12	384

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
FS 10	Food Service Administration	3	3	0	48
FS 11	Food Purchasing & Storage	3	3	0	48
FS 12	Planning Food Service Systems	3	2	2	64
FS 13	Supervisory Techniques	3	3	0	48
FS 14	Nutritional Aspects of Disease	3	3	0	48
	Psychology 210-Social Psychology	3	3	0	48
		18	17	2	304

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: one year of mathematics; one year of science

COURSE DESCRIPTIONS / *food service technology department*

CH 01 CHEMISTRY I 4 Cr. - 96 Hrs.

Basic principles and applications of chemistry.

CH 02 CHEMISTRY II 4 Cr. - 96 Hrs.

The chemistry of organic compounds of biological importance.

FS 01 ORIENTATION 1 Cr. - 16 Hrs.

Code of ethics; functions, organization, and roles of food service departments; objectives of different group-care institutions.

FS 02 FOODS I 3 Cr. - 80 Hrs.

Menus for quantity food preparation; factors in menu patterns; fundamentals of food preparation; merchandising of food.

FS 03 NUTRITION I 3 Cr. - 48 Hrs.

Essentials of diets and their relationships to nutritional needs of various family members.

FS 04 FOODS II 3 Cr. - 112 Hrs.

Principles of food preparation; techniques of food preparation as related to food quality; selection of equipment for food preparation and service; sanitation, safety and personal hygiene.

FS 05 QUANTITY FOODS I 3 Cr. - 80 Hrs.

Principles of quantity food preparation; standardization of recipes; portion control; planning quantity food production.

FS 06 NUTRITION II 3 Cr. - 48 Hrs.

Special considerations in nutritional care; therapeutic nutrition; diet modification in caloric content, consistency and nutritional content.

FS 07 QUANTITY FOODS II 3 Cr. - 112 Hrs.

Time budgeting, quantity food production and management; food service and standards; cost relationships of high quality foods.

FS 08 CHEMISTRY OF FOODS 4 Cr. - 128 Hrs.

Chemistry of carbohydrates; lipides and proteins; actions of enzymes; digestion and metabolism; process of calorimetry; relationship of nutrition to blood, urine, hormones and vitamins.

FS 09 ORGANIZATION AND MANAGEMENT 3 Cr. - 48 Hrs.

Organizational structure of group-care institutions; management of food service department; policies, procedures, budgets and cost analysis of food service departments.

FS 10 FOOD SERVICE ADMINISTRATION 3 Cr. - 48 Hrs.

Professional duties of management personnel in large food operations.

FS 11 FOOD PURCHASING AND STORAGE 3 Cr. - 48 Hrs.

Food standards and procurements; factors in food purchasing; receiving foods and supplies; methods of storage and keeping records.

FS 12 PLANNING FOOD SERVICE SYSTEMS 3 Cr. - 64 Hrs.

Planning efficient work methods and flow of work; space and equipment requirements; floor plans and maintenance.

FS 13 SUPERVISORY TECHNIQUES 3 Cr. - 48 Hrs.

Personnel policies; job descriptions; selecting and training personnel; human relationships; improvement of work methods.

FS 14 NUTRITIONAL ASPECTS OF DISEASE 3 Cr. - 48 Hrs.

Metabolic changes as related to disease; nutrition and therapy.

PN 24 HUMAN PHYSIOLOGY 3 Cr. - 48 Hrs.

Functions of animal and human body.

TE 11 ENGLISH COMPOSITION 3 Cr. - 48 Hrs.

For course description, see English Department, page 143.

TE 21 SPEECH 3 Cr. - 48 Hrs.

For course description, see English Department, page 143.

TM 25 BUSINESS MATHEMATICS 3 Cr. - 48 Hrs.

Mathematics as it applies to installment buying, discounting notes, drafts, insurance contracts, property and income taxes, social security, stocks and bonds, transportation; preparation of graphs and use of measurements and business records.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

CHEMISTRY 101 AND 102 8 Cr. - 128 Hrs.
GENERAL CHEMISTRY

Study of fundamental laws and theories of chemistry. Topics include atomic structure, stoichiometry, bonding, oxidation-reduction reactions, physical states of matter, solutions, kinetics and equilibrium, electrochemistry, organic chemistry, and nuclear chemistry. Descriptive chemistry of selected elements included.

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

PSYCHOLOGY 101 3 Cr. - 48 Hrs.
GENERAL PSYCHOLOGY

Introduction to the science of human behavior.

PSYCHOLOGY 210 3 Cr. - 48 Hrs.
SOCIAL PSYCHOLOGY

Interaction of individuals in their several group relations, the contacts of harmony, and conflict within groups as well as between groups, group leadership and group controls; phenomena of imitation and suggestion.

FORESTRY DEPARTMENT / Career Program

JOSEPH G. SICK, Chairman

Associate Degree
FR Forest Technology

FOREST TECHNOLOGY (FR)

Associate Degree / Two Years

The forest technician's job is relatively new and was designed to meet the ever-increasing demand for trained personnel to assist professional foresters. The Forest Technology Program places emphasis on practical applications of technical theories to insure your employment in private or public forestry. You will find that field work is an important part of the program and that a broad range of scientific subjects are covered.

Types of jobs: In public, state, or federal agencies: forest fire control; wildlife habitat improvement; maintenance of forest roads, structures and recreation areas; timber estimation; timber marking; and stand improvement. In private employment: pulpwood or sanitimber procurement, timber estimation, planning and construction of forest roads, supervision of logging operations, and location and survey of forest property lines.

Job Opportunities: Most public forestry agencies now include technician positions in their organization, and your background of forest land management and use will insure you not only employment but also rapid advancement.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
FR 10	Introduction to Forestry I	1	1	0	16
FR 11	Dendrology	3	2	3	80
FR 13	Forest Mensuration	3	2	3	80
FR 14	Forest Botany	3	3	0	48
	Physical Education 101	1	0	2	32
		18	15	9	384

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
FR 20	Introduction to Forestry II	1	1	0	16
FR 25	Forest Ecology	3	2	3	80
FR 28	Advanced Forest Mensuration	3	2	3	80
FR 22	Forest Surveying I	3	1	6	112
	Physical Education 102	1	0	2	32
		18	13	15	448

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BA 13	Applied Accounting-Managerial	3	3	0	48
FR 31	Silviculture	3	2	3	80
FR 32	Forest Surveying II	3	2	3	80
FR 33	Equipment & Machinery	3	2	3	80
FR 36	Timber Harvesting	3	2	3	80
		15	11	12	368

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
FR 42	Forest Products	3	2	3	80
FR 43	Forest Protection	2	2	0	36
FR 44	Forest Land Management	3	2	3	80
FR 45	Forest Improvements	3	2	3	80
EC 11	Economics	3	3	0	48
	*Elective	3	3	0	48
		17	14	9	372

*Electives: *Geography 101; Sociology 101; Speech 211; BS 09 Typewriting.*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry.

COURSE DESCRIPTIONS / *forestry department*

BA 13 APPLIED ACCOUNTING-MANAGERIAL

For course description, see Business Administration Department, page 104.

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

FR 10 INTRODUCTION TO FORESTRY I 1 Cr. - 16 Hrs.

General review of historic role of United States forests leading to present use and importance to nation.

FR 11 DENDROLOGY 3 Cr. - 80 Hrs.

Classification, identification, and distribution of woody plants in the United States; emphasis on species of local commercial importance.

FR 13 FOREST MENSURATION 3 Cr. - 80 Hrs.

Measurement of standing trees, logs, and other cut wood products; determination of contents in terms of board and cubic feet, cords, and pounds; measurement of tree and forest growth.

FR 14 FOREST BOTANY 3 Cr. - 48 Hrs.

Study of plant anatomy and physiology with special reference to tree stem structure, identification of species based on macroscopic characteristics of the wood.

FR 20 INTRODUCTION TO FORESTRY II 1 Cr. - 16 Hrs.

Continuation of FR 10: public forest land administration, forest policy, and development of forestry profession.

FR 22 FOREST SURVEYING I 3 Cr. - 112 Hrs.

Lettering and basic drafting techniques; introduction to plane surveying; compass and tape surveys and plotting.

FR 25 FOREST ECOLOGY 3 Cr. - 80 Hrs.

Study of forest as biological community; effects of environmental factors of soil upon forest community and individual trees.

FR 28 ADVANCED FOREST MENSURATION 3 Cr. - 80 Hrs.

Determination of quality of logs and trees; estimation of volumes of large timber areas by different sampling techniques; use and interpretation of aerial photos in forest surveys.

FR 31 SILVICULTURE 3 Cr. - 80 Hrs.

Study of forestry practices; systems used in establishment and management of trees for sustained production of timber products.

FR 32 FOREST SURVEYING II 3 Cr. - 80 Hrs.

Introduction to more precise surveying techniques for property and boundary surveys, computations and plotting.

FR 33 EQUIPMENT AND MACHINERY 3 Cr. - 80 Hrs.

Operation and maintenance of logging machinery; forest fire control equipment and related mechanical devices used in forest operations.

FR 36 TIMER HARVESTING 3 Cr. - 80 Hrs.

Felling, skidding and transportation of timber products from woods to manufacturing point; application of modern logging methods and techniques; breakdown of entire tree stems into lengths and units of highest economic values.

FR 42 FOREST PRODUCTS 3 Cr. - 80 Hrs.

Conversion of round timber products into semi-finished state; manufacture of raw materials into finished consumer products; seasoning of lumber; preservative treatments of wood.

FR 43 FOREST PROTECTION 2 Cr. - 36 Hrs.

Causes, effects, control of forest fires; identification, effects, control of other harmful agents - insects, diseases.

FR 44 FOREST LAND MANAGEMENT 3 Cr. - 80 Hrs.

Administration and management (single and coordinated multiple use) of public and privately owned forest lands for purposes of timber production, recreation use, wildlife and water.

FR 45 FOREST IMPROVEMENTS 3 Cr. - 80 Hrs.

Design, application and construction of simple engineering structures: logging roads, trails, bridges, erosion control devices, drainage structures, and various recreation facilities.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

GEOGRAPHY 101 3 Cr. - 48 Hrs.
PHYSICAL GEOGRAPHY

Introduction to topographic maps, landforms, weather elements, climates, soils and vegetation.

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

SPEECH 211 3 Cr. - 48 Hrs.
FUNDAMENTALS OF SPEECH

Basic physiology of speech. Oral reading; composition and delivery of expository speeches for different types of audiences.

SOCIOLOGY 101 3 Cr. - 48 Hrs.
INTRODUCTION TO SOCIOLOGY

Introduction to methods used by sociologists in studying how people live together. Dynamic relationships among society, culture, and personality serve as focus for the course materials.

HEALTH OCCUPATIONS DEPARTMENT / Career Programs

THELMA S. MORRIS, Chairman

Certificate

PN Practical Nursing
ST Surgical Technician

PRACTICAL NURSING PROGRAM (PN)

Certificate / One Year

The Practical Nursing Program will prepare you to plan and administer total nursing care to selected individuals, such as the sub-acutely ill, the chronically ill, the convalescent, and the handicapped of all ages. You will also be qualified to assist the professional nurse in her more technical responsibilities and be eligible to write the examination for Practical Nurse Licensure. The pre-clinical phase of the program, taught at the college, consists of basic nursing theories and the skills to effectively apply them. Clinical work experience under college supervision at both the Divine Providence Hospital and the Williamsport Hospital is provided.

Types of Jobs: Employment in hospitals, convalescent homes, visiting nurses' associations, doctor's offices, private duty.

Job Opportunities: Excellent with steadily increasing salaries.

PRE-CLINICAL PHASE

		Hrs.
PN 11	Personal and Vocational Relationships	30
PN 12	Body Structure and Function	60
PN 13	Personal and Community Health	34
PN 14	The Family	30
PN 15	Nutrition and Diet Therapy	30
PN 16	Nursing Skills-Basic and Advanced	296
PN 17	Introduction to Conditions of Illness	30
PN 19	Supervised Study	85
	Total	595

APPLIED LEARNING EXPERIENCES

		Hrs.
PN 21	Clinical Experience in the Care of Adult Patients Including Geriatrics	880
PN 22	Clinical Experience in Maternity Nursing	240
PN 23	Clinical Experience in Pediatric Nursing	160
	Total	1280

Recommended high school subjects: Two years of mathematics; one year of science.

SURGICAL TECHNICIAN PROGRAM (ST)

Certificate / 40 Weeks

Completion of this program will enable you to function as a skilled surgical technician whose duties include care, preparation and maintenance of sterile and unsterile supplies, and assistance to registered nurses in the preparation of operating rooms for surgery, in the "scrub in" and in circulation during surgery.

Types of Jobs: Members of surgical teams in hospital operating rooms and central service departments or other areas closely concerned with the principles and practices of surgical asepsis.

Job Opportunities: Good and increasing.

FIRST SEMESTER

	Course	16 Weeks	Hrs.
ST 10	Professional Adjustments		40
ST 12	Body Structure & Function		120
ST 13	Principles of Asepsis		60
ST 14	Sterilization and Care of Supplies		60
ST 15	Operating Room Techniques		140
ST 16	Operating Room Laboratory		140
			560

SECOND SEMESTER

	Course	16 Weeks	Hrs.
ST 21	Surgical Procedures		64
ST 22	Supervised Clinical Experience		496
			560

THIRD SEMESTER

	Course	Summer Session 8 Weeks	Hrs.
ST 23	Surgical Procedures		32
ST 24	Supervised Clinical Experience		248
			280
	Total Hours		1400

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *health occupations department*

PN 11 PERSONAL AND VOCATIONAL RELATIONSHIPS — 30 Hrs.

Orientation, study skills, communications; fundamentals of ethical, psychological, social and human relationships; vocational, legal, religious implications in nursing; nursing history and organizations.

PN 12 BODY STRUCTURE AND FUNCTION — 60 Hrs.

A study of basic human anatomy and physiology as a foundation for safe, intelligent, nursing care and the development of nursing skills; principles of chemistry, microbiology and physics.

PN 13 PERSONAL AND COMMUNITY HEALTH — 34 Hrs.

Study of the fundamental principles related to the maintenance of personal and community health, including public health laws and methods involved in the prevention and control of diseases.

PN 14 THE FAMILY — 30 Hrs.

The family and its function in contemporary society including normal growth and development of the child from birth through adolescence, characteristics of the aging process, and promotion of an environment which is conducive to mental and physical health.

PN 15 NUTRITION AND DIET THERAPY — 30 Hrs.

A study of the body's normal nutrition requirements and the modifications of these requirements during illness.

PN 16 NURSING SKILLS - BASIC AND ADVANCED — 296 Hrs.

Theory and clinical practice in bedside nursing; drugs and solutions; principles underlying nursing skills providing the foundation for safe nursing care for patients of all ages; diversional activities essential to patient's immediate and long-term needs.

PN 17 INTRODUCTION TO CONDITIONS OF ILLNESS — 30 Hrs.

A symptomatic approach to illness in which the general deviations from normal body functions are considered together with such nursing problems as may arise from

functional disturbances. A study of etiology, pathology, symptomatology, diagnostic procedures and methods of treatment.

PN 19 SUPERVISED STUDY 85 Hrs.

Specific time set for student study under direction and supervision of instructor.

PN 21 CLINICAL EXPERIENCE IN THE CARE OF ADULT PATIENTS INCLUDING GERIATRICS 880 Hrs.

Surgical patients, including recovery room; medical patients, including mental health; observation and experience in physical therapy, central supply and intensive care units; diet and nutrition therapy. Concurrent planned instruction in theory of medical-surgical nursing.

PN 22 CLINICAL EXPERIENCE IN MATERNITY NURSING 240 Hrs.

Care of mothers and newborns, including prenatal and postnatal care, experience and observation in labor and delivery, prenatal clinics, mothers' clubs, etc. Thirty hours of concurrent instruction.

PN 23 CLINICAL EXPERIENCE IN PEDIATRIC NURSING 160 Hrs.

Nursing care of the child; childhood illnesses. Twenty hours of concurrent instruction.

ST 10 PROFESSIONAL ADJUSTMENTS 40 Hrs.

General introduction to hospital and operating room; history, philosophy and purpose of each; plan and inter-departmental relationships; job description and qualifications; legal, moral and religious responsibilities; personal health and hygiene; effective study methods.

ST 12 BODY STRUCTURE AND FUNCTION 120 Hrs.

Basic structure and function of the human body; deviations from the normal that necessitate surgery; care of specimens.

ST 13 PRINCIPLES OF ASEPSIS 60 Hrs.

History of asepsis; principles and application of bacteriology as related to sound practice of aseptic techniques; responsibility for carrying out strict aseptic techniques.

ST 14 STERILIZATION AND CARE OF SUPPLIES 60 Hrs.

Kinds, methods, and mechanics of sterilization and supplies.

ST 15 OPERATING ROOM TECHNIQUES 140 Hrs.

Principles of pre-operative care and safety of patient; development of skills as member of operating room team; basic concepts of anesthesiology; relationship to the patient; use of records.

ST 16 OPERATING ROOM LABORATORY 140 Hrs.

Beginning skills: preliminary preparation of the patient, duties of circulating and scrub assistant; demonstrations, return demonstrations and practice; selected clinical experience.

ST 21 SURGICAL PROCEDURES 64 Hrs.

Care of the patient in general, ear, nose and throat, gynecological, orthopedic, eye and genito-urinary surgery; peroral endoscopy.
Prerequisites: ST 10, ST 12, ST 13, ST 14, ST 15, ST 16

ST 22 SUPERVISED CLINICAL EXPERIENCE 496 Hrs.

Intermediate skills: circulating and scrub assistant duties; housekeeping techniques applicable to the O.R. Suite. Concurrent with ST 21.

ST 23 SURGICAL PROCEDURES 32 Hrs.

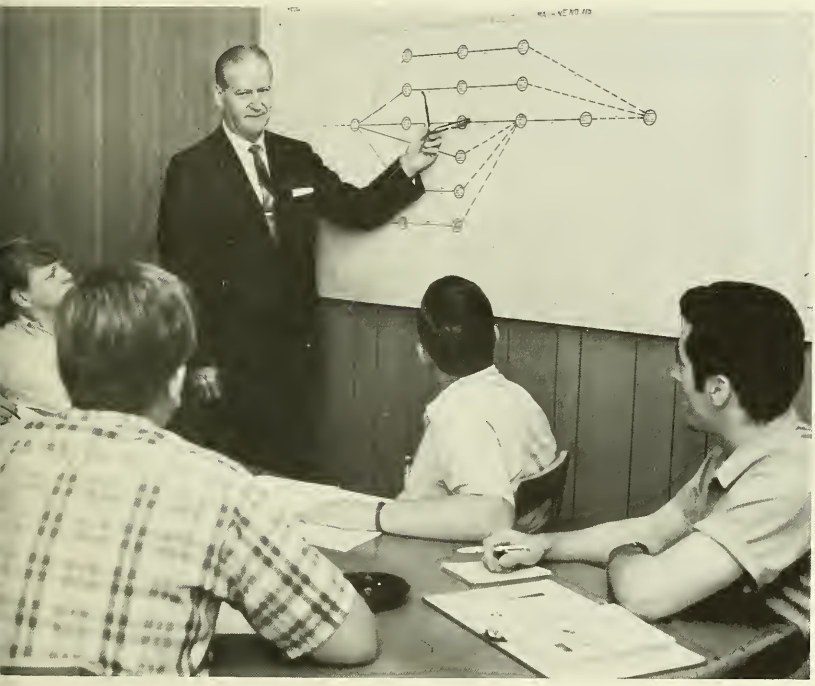
Care of the patient in plastic, chest, neurological, and cardiovascular surgery.
Prerequisites: ST 21, ST 22

ST 24 SUPERVISED CLINICAL EXPERIENCE 248 Hrs.

Advanced skills as member of operating room team. Concurrent with ST 23.

INDUSTRIAL MANAGEMENT DEPARTMENT / Career Program

C. EDWARD WELSH, Chairman



Associate Degree

IM Industrial Management

INDUSTRIAL MANAGEMENT (IM)

Associate Degree / Two Years

The Industrial Management Program is designed to give you a basic understanding of modern theory and practice in effective utilization of labor, materials, and money in the industrial process. The curriculum provides a generous amount of lab and shop work to develop your skill in the practical application of learned theory. Training in fundamental business and management principles, supplemented by technical skills, will prepare you well for entry positions in operating management or in many administrative or service activities of industry.

Types of Jobs: Management trainee, supervisor, quality control manager, technician, buyer, production controlman, personnel assistant, time and motion study technician, production planner, maintenance controlman, and safety director.

Job Opportunities: Unlimited with excellent starting salaries and better than average opportunity for rapid advancement.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 11	English Composition	3	3	0	48
TM 13	Algebra	4	4	1	80
BM 13	Principles of Business	3	3	0	48
ED 22	Drafting and Sketching	3	2	4	96
BS 09	Typewriting	1	1	2	48
BA 13	Applied Accounting-Managerial	3	3	0	48
	Physical Education 101	1	0	2	32
		18	16	9	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TE 21	Speech	3	3	0	48
TM 21	Trigonometry	4	4	1	80
EL 11	DC Fundamentals	5	5	3	128
IM 20	Industrial Organization & Management	3	3	0	48
	Physical Education 102	1	0	2	32
	*Elective	3	0-1	6-9	112-144
		19	15-16	12-15	448-480

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
IM 31	Supervision-Human Relations	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
IM 41	Industrial & Public Relations	3	3	0	48
TM 40	Introductory Industrial Statistics	3	3	0	48
	*Elective	3-5	1-5	6-9	80-144
		16-18	14-18	6-9	288-352

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
IM 40	Work Simplification, Time Study & Incentives	2	2	1	48
IM 42	Production, Quality & Cost Control	2	2	0	32
IM 43	Government & Business	2	2	0	32
EC 46	Economics	3	3	0	48
IM 44	Industrial Safety	2	2	1	48
CS 01	Introduction to Data Processing	3	3	0	48
	*Elective	2-4	1-4	0-6	32-112
		16-18	15-18	2-6	258-338

***Electives:** *Second Semester: EL 12 Basic Wiring Lab; IM 21 Wood Processing I; IM 22 Machine Shop Practice I. Third Semester: ET 21 Basic Electronics; IM 32 Wood Processing II; IM 33 Machine Shop Practice II; IM 34 Acetylene Welding-Theory and Practice; SM 10 Basic Sheet Metal (Hand /Machine). Fourth Semester: EI 31 Basic Instrumentation; IM 45 Electric Welding-Theory & Practice; TS 22 Introduction to Metallurgy; IM 46 Tape Controlled Machine Tools; IM 47 Industrial Psychology; BM 36 Marketing.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

COURSE DESCRIPTIONS /*industrial management department*

BA 13 APPLIED ACCOUNTING—MANAGERIAL

For course description, see Business Administration Department, page 104.

BM 13 PRINCIPLES OF BUSINESS

For course description, see Business Administration Department, page 104.

BM 36 MARKETING 3 Cr. - 48 Hrs.

Merchandising; channels of distribution; government regulations; pricing; cost and branding; buyer and consumer influence on marketing programs; current marketing trends.

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 110.

EC 46 ECONOMICS

For course description, see Economics Department, page 128.

ED 22 DRAFTING & SKETCHING

For course description, see Drafting Department, page 124.

EI 31 BASIC INSTRUMENTATION 3 Cr. - 64 Hrs.

Lecture-demonstrations on primary sensing elements, indicators, recorders, controllers, final control elements and mechanisms; discussion of variables such as temperature, pressure, liquid, level, flow-rate; problems of instrumentation.

EL 11 DC FUNDAMENTALS

For course description, see Electrical Department, page 133.

EL 12 BASIC WIRING LAB

For course description, see Electrical Department, page 133.

ET 21 BASIC ELECTRONICS

For course description, see Electronics Department, page 141.

IM 20 INDUSTRIAL ORGANIZATION AND MANAGEMENT 3 Cr. - 48 Hrs.

Structure of proprietorship, partnership, and corporation; methods of establishing and financing; elements of organization; principles of authority, accountability and responsibility; introduction to scientific approach to management decision-making.

IM 21 WOOD PROCESSING I 3 Cr. - 112 Hrs.

Identification, properties, and application of various wood species; introduction to use, care, and setup of basic tools and equipment of wood processing industry; assembly, gluing, and clamping; shop safety.

IM 22 MACHINE SHOP PRACTICE I 3 Cr. - 112 Hrs.

Introduction to use, care and setup of basic tools and equipment of machine shop—hand and power—including engine lathe, milling machine, shaper; shop safety.

IM 31 SUPERVISION—HUMAN RELATIONS 3 Cr. - 48 Hrs.

Analysis of concepts of supervision and its inter-personal relationships; recognition of and basic techniques for discharge of supervisory responsibility—planning, organizing, training, motivating, directing, controlling, communicating, and coordinating.

IM 32 WOOD PROCESSING II 3 Cr. - 112 Hrs.

Production techniques of wood processing industry; jigs and fixtures; use, care and setup of specialty equipment; knife layout and grinding; laminating and bending; finishing.

IM 33 MACHINE SHOP PRACTICE II 3 Cr. - 112 Hrs.

Advanced work with engine lathe and introduction to use, care and setup of turret lathe and automatic screw machine; production line techniques; quality and time standards.

IM 34 ACETYLENE WELDING—THEORY & PRACTICE 3 Cr. - 112 Hrs.

Basic acetylene welding of the five general types of joints in flat, vertical, horizontal and overhead positions; brazing and freehand cutting; production line techniques.

IM 40 WORK SIMPLIFICATION, TIME STUDY AND INCENTIVES 2 Cr. - 48 Hrs.

Manual motions, work place layouts, production job analysis and evaluation; work simplification and time study; establishing work loads; presenting work standards, changes in job content, work loads to employees; piece work rates, bonuses and other incentives.

IM 41 INDUSTRIAL AND PUBLIC RELATIONS 3 Cr. - 48 Hrs.

Trade unions and labor laws; essentials of contract negotiation and interpretation; grievance procedures and arbitration; employee relations applied to welfare, safety, compensation, benefits, job satisfaction; establishing and maintaining company image.

IM 42 PRODUCTION, QUALITY AND COST CONTROL 2 Cr. - 32 Hrs.

Introduction to and application of quantitative approach to management decisions; planning and control concepts; inputs for control systems; PERT: linear programming, budgets, goals and objectives.

IM 43 GOVERNMENT AND BUSINESS 2 Cr. - 32 Hrs.

History, nature, and scope of governmental role in business environment; study of selected statutes, agencies, and other control and assistance media.

IM 44 INDUSTRIAL SAFETY 2 Cr. - 48 Hrs.

Safety and protection of employees and company property; developing safety-consciousness; nature and recognition of hazards; protective devices and equipment; first aid.

IM 45 ELECTRIC WELDING—THEORY AND PRACTICE 3 Cr. - 112 Hrs.

Basic electric welding of general types of joints with different types and sizes of electrodes; electric welding on production line.

IM 46 TAPE CONTROLLED MACHINE TOOLS 3 Cr. - 48 Hrs.

Theory of application of tape control to machine tools and production process: present and future.

IM 47 INDUSTRIAL PSYCHOLOGY 3 Cr. - 48 Hrs.

Study of individual differences in industry; analysis of human needs and morale; selecting, testing, training, and motivating employees; evaluating and improving personal effectiveness; factors affecting employee efficiency and safety.

SM 10 BASIC SHEET METAL (HAND-MACHINE)

For course description, see Sheet Metal Department, page 202.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TM 40 INTRODUCTORY INDUSTRIAL STATISTICS

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 22 INTRODUCTION TO METALLURGY

For course description, see Science Department, page 199.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

JOURNALISM & BROADCASTING DEPARTMENT / Career Programs

SLOAN O'DONNELL, Chairman

Associate Degree
BR Broadcasting
JO Journalism

BROADCASTING (BR)

Associate Degree / Two Years

Broadcasting is the doorway to the world of instant news. If you are interested in keeping abreast of the times, broadcasting may be the field for you. From radio announcer to advertising copywriter, you will be in a key position in the field of communications. Topnotch announcers and newsmen from nearby radio stations will teach you modern broadcasting techniques using the college's radio studio and closed-circuit television system. Background courses in history, government, economics, sociology, psychology, and philosophy will enrich you culturally and give you a head start if you should wish to seek a baccalaureate degree later.

Types of Jobs: Radio announcer, disc jockey, news commentator, public relations assistant, advertising copywriter.

Job Opportunities: Unlimited. Radio stations throughout the state are looking for qualified broadcasters, and opportunities for advancement in both radio and television are excellent.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BS 10	Typewriting	2	0	5	80
BS 14	Shorthand	3	1	4	80
JO 10	News Writing	3	2	2	64
JO 19	Reading and Comprehension Improvement	2	1	2	48
	English 101-English Composition	3	3	0	48
	Government 201-American, National	3	3	0	48
	Physical Education 101	1	0	2	32
		17	10	15	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BR 10	Introduction to Announcing	3	1	4	80
BR 11	Basic Electronics and FCC Licensing	2	1	4	80
BR 21	In-Service Training	2	0	6	96
	Government 202-State and Local	3	3	0	48
	History 202-U.S. after 1865	3	3	0	48
	Speech 211-Fundamentals of Speech	3	3	0	48
	Physical Education 102	1	0	2	32
		17	11	16	432

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BR 12	Advanced Announcing	3	1	4	80
BR 13	Radio Programming	3	1	4	80
BR 22	In-Service Training	2	0	6	96
JO 15	Fine Arts Seminar	1	1	0	16
	Economics 201-Introduction and Analysis-Macro	3	3	0	48
	Sociology 101-Introduction to Sociology	3	3	0	48
	Physical Education 103	1	0	2	32
		16	9	16	400

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BR 14	Station Management and Community Responsibility	3	3	0	48
BR 15	Broadcast Advertising-Local and National	3	1	4	80
BR 23	In-Service Training	2	0	6	96
JO 18	Science Seminar	1	1	0	16
	Philosophy 101-Introduction to Philosophical Analysis	3	3	0	48
	Psychology 101-General Psychology	3	3	0	48
	Physical Education 104	1	0	2	32
		16	11	12	368

Students receiving a 3.0 or better average in their first year may take special electives with the Dean's permission.

Recommended high school subjects and activities: Speech, broadcasting, journalism, drama, and student publications.

Associate Degree / Two Years

JOURNALISM (JO)

You will find that the Journalism Program emphasizes a "central core" of practical courses in news and feature story writing, news photography, editing, copywriting, and community responsibility, all taught by practicing newsmen in the area. To aid you as a future newsman, background courses in history, government, economics, sociology, psychology, and philosophy are included in the program. Also, if you should wish to seek a baccalaureate degree at a later date, the liberal arts background courses are fully transferable to four-year institutions.

Types of Jobs: Newspaper reporter, advertising copywriter, public relations assistant, news photographer, magazine research assistant.

Job Opportunities: Newspapers throughout the state and nation need qualified newsmen, and opportunities for advancement are excellent.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BS 10	Typewriting	2	0	5	80
BS 14	Shorthand	3	1	4	80
JO 10	News Writing	3	2	2	64
JO 19	Reading & Comprehension Improvement	2	1	3	48
	English 101-English Composition	3	3	0	48
	Government 201-American, National	3	3	0	48
	Physical Education 101	1	0	2	32
		17	10	16	400

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
JO 11	Photography for Newsmen	2	0	5	80
JO 12	News Reporting	3	2	2	64
JO 21	In-Service Training	2	0	6	96
	Government 202-State and Local	3	3	0	48
	History 202-U.S. after 1865	3	3	0	48
	Speech 211-Fundamentals of Speech	3	3	0	48
	Physical Education 102	1	0	2	32
		17	11	15	416

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
JO 13	Feature Writing	3	1	4	80
JO 14	Editing	3	1	4	80
JO 15	Fine Arts Seminar	1	1	0	16
JO 22	In-Service Training (Advanced)	2	0	6	96
	Economics 201-Introduction and Analysis-Macro	3	3	0	48
	Sociology 101-Introduction to Sociology	3	3	0	48
	Physical Education 103	1	0	2	32
		16	9	16	400

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
JO 16	Newspaper Management & Community Responsibility	3	3	0	48
JO 17	Advertising-Basic Layouts	3	1	4	80
JO 18	Science Seminar	1	1	0	16
JO 23	In-Service Training (Advanced)	2	0	6	96
	Philosophy 101-Introduction to Philosophical Analysis	3	3	0	48
	Psychology 101-General Psychology	3	3	0	48
	Physical Education 104	1	0	2	32
		16	11	12	368

Recommended high school subjects and activities: Journalism and student publications.

COURSE DESCRIPTIONS / *journalism & broadcasting department*

BR 10 INTRODUCTION TO ANNOUNCING 3 Cr. - 80 Hrs.

Principles of announcing; practice in reading, voice inflection, pronunciation of foreign names, and similar exercises; use of tape recorder in pre-recording repetitive items; lab instruction.

BR 11 BASIC ELECTRONICS AND FCC LICENSING 2 Cr. - 80 Hrs.

Fundamental mechanics of operation of tape recorders, turntables, network facilities, and multispeaker systems; mechanics necessary to obtain FCC licensing; field visits to at least five different stations.

BR 12 ADVANCED ANNOUNCING 3 Cr. - 80 Hrs.

Special techniques employed in sports announcing, "talk" programs, and interviews; lab practice; practice on College audio-visual television equipment.

BR 13 RADIO PROGRAMMING 3 Cr. - 80 Hrs.

Determining basic character of a station; setting up a program to meet objectives; use of "public interest" programs and national, state, and local news to meet FCC requirements; maintaining balance between "talk" and "music" programs.

BR 14 STATION MANAGEMENT AND COMMUNITY RESPONSIBILITY 3 Cr. - 48 Hrs.

Study of problems related to serving community needs while making a profit; ratio of advertising to program time; character of station; meeting community responsibility through community interest programs; responsible use of editorial privilege.

BR 15 BROADCAST ADVERTISING— LOCAL AND NATIONAL 3 Cr. - 80 Hrs.

Techniques of creating effective advertising by correlating the seller and product with the most likely buyer; selection of time, type, and method of presentation; use of correlated national advertising.

BR 21 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Supervised work with the College News Bureau in the preparation of taped news releases for local radio stations, or assignments to the College's closed-circuit television production teams.

BR 22 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Advanced work with the College News Bureau in the preparation of "public service" programs for local radio stations, or more responsible assignments on closed-circuit television.

BR 23 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Major assignments with the College News Bureau or the audio-visual closed-circuit television system including the total preparation of at least one program from conception to final production.

BS 10 TYPEWRITING

For course description, see Business Administration Department, page 105.

BS 14 SHORTHAND

For course description, see Business Administration Department, page 105.

JO 10 NEWSWRITING 3 Cr. - 64 Hrs.

Incorporating the "Who?-What?-Why?-When?-How?" technique into news stories for radio and newspapers; two-hour lab where two or more typical news stories are written to meet "deadlines."

JO 11 PHOTOGRAPHY FOR NEWSMEN 2 Cr. - 80 Hrs.

Creating effective pictures for news stories and advertising; camera and darkroom techniques; lab practice.

JO 12 NEWS REPORTING 3 Cr. - 64 Hrs.

News reporting peculiar to newspapers; prosaic hospital news, obituaries, rural correspondents' stories, social news, police stories, court house sources; timeliness and accuracy.

JO 13 FEATURE WRITING 3 Cr. - 80 Hrs.

Techniques of employing reader analysis, research, in-depth interviews, photography, and graphic writing skills in feature and editorial preparation; lab practice.

JO 14 EDITING 3 Cr. - 80 Hrs.

Techniques of editing material for newspapers, magazines, and other publications; headline writing; copyreading; layout and typography; printing processes; lab practice.

JO 15 FINE ARTS SEMINAR 1 Cr. - 16 Hrs.

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include art of the masters, modern art, sculpture, modern dance, opera, classical music, related areas.

JO 16 NEWSPAPER MANAGEMENT AND COMMUNITY RESPONSIBILITY 3 Cr. - 48 Hrs.

Inter-relation of news management, advertising, editorial policy, and community responsibility.

JO 17 ADVERTISING-BASIC LAYOUTS 3 Cr. - 80 Hrs.

Techniques of preparing and integrating advertising copy with pertinent illustrations in attractive format; lab practice.

JO 18 SCIENCE SEMINAR 1 Cr. - 16 Hrs.

Eight two-hour lecture-discussion sessions conducted by visiting lecturers; may include peaceful use of atomic power, stream pollution, air pollution, space exploration, undersea exploration, related areas.

JO 19 READING AND COMPREHENSION IMPROVEMENT 2 Cr. - 48 Hrs.

Practice designed to help students improve reading habits and remember ideas and details: previewing, skimming, paragraph reading, outlining.

JO 21 IN-SERVICE TRAINING 2 Cr. - 96 Hrs.

Supervised, on-the-job training with the College News Bureau or the Publications Department or on the staff of student publications.

JO 22 IN-SERVICE TRAINING (ADVANCED) 2 Cr. - 96 Hrs.

On-the-job training in the College News Bureau or Publications Department or on the staff of student publications. Students must have demonstrated the ability to handle writing assignments with minimum supervision.

JO 23 IN-SERVICE TRAINING (ADVANCED) 2 Cr. - 96 Hrs.

Editorial responsibilities on student publications or substantial assignments with the College News Bureau or Publications Department requiring initiative and proficiency.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

ECONOMICS 201-INTRODUCTION & ANALYSIS-MACRO — 3 Cr. - 48 Hrs.

Economic concepts, principles and institutions. Methods of analysis.

ENGLISH 101, ENGLISH COMPOSITION — 3 Cr. - 48 Hrs.

Basic composition involving language structure, rhetorical principles, readings in expository prose, and orderly, clear writing.

GOVERNMENT 201-AMERICAN GOVERNMENT—NATIONAL — 3 Cr. - 48 Hrs.

Federal government, its powers and organization. Functions of legislative, executive and judicial branches. Our federal system as it has developed.

GOVERNMENT 202-STATE AND LOCAL — 3 Cr. - 48 Hrs.

State and local government institutions, their functions and responsibilities; intergovernmental relations.

HISTORY 202-U.S. AFTER 1865 — 3 Cr. - 48 Hrs.

Political, economic, and social development of the United States, from 1865 to present.

PHILOSOPHY 101-INTRODUCTION TO PHILOSOPHICAL ANALYSIS — 3 Cr. - 48 Hrs.

Investigation of major perennial problems in philosophy: Meaning and Truth, Perception and External World; God, Mind, and Body.

PHYSICAL EDUCATION 101, 102, 103 AND 104 — 4 Cr. - 128 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

PSYCHOLOGY 101-GENERAL PSYCHOLOGY — 3 Cr. - 48 Hrs.

Introduction to the science of human behavior.

SPEECH 211-FUNDAMENTALS OF SPEECH — 3 Cr. - 48 Hrs.

Basic physiology of speech; oral reading; composing and delivering expository speeches for different types of audiences.

SOCIOLOGY 101-INTRODUCTION TO SOCIOLOGY — 3 Cr. - 48 Hrs.

Introduction to methods used by sociologists in studying how people live together; dynamic relationships among society, culture, and personality serve as focus for the course materials.

LIBRARY SCIENCE DEPARTMENT / Career Program

ROBERT C. MACHINSKI, Chairman

Associate Degree
LS Library Assistant

LIBRARY ASSISTANT (LS)

Associate Degree / Two Years

A career as a library assistant will appeal to you if you like people, books, and library work. The need for qualified library assistants will increase as the shortage of professional librarians continues. The Library Assistant Program will prepare you for immediate employment in various types of libraries as an aide to the professional librarian. Practical experience in library work through the internship program, library oriented lectures, and related liberal arts courses will qualify you to advance professionally in the library field.

Types of Jobs: Positions in public and special libraries; schools, colleges, and related firms.

Job Opportunities: Your specialized knowledge and skill will merit an above-average starting salary, and the growing need for qualified people in the library field will insure you employment.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
LS 10	Introduction to Libraries & Books	3	3	0	48
LS 11	Internship I	3	0	9	144
LS 15	Technical Services I	3	2	3	80
*BS 10	Typewriting	2	2	3	80
	Bus. Adm 205-Automatic Data Processing	3	3	1	64
	English 101-Composition and Literature	3	3	0	46
		17	13	16	464

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
LS 21	Internship II	3	0	9	144
LS 30	Technical Services II	3	2	3	80
LS 41	Introduction to Reference	3	3	0	48
*BS 20	Typewriting	2	2	3	80
	History 101-World History	3	3	0	48
	English 102-Composition and Literature	3	3	0	48
		17	13	15	448

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
LS 31	Aids & Principles of Book Selection and Bibliography	3	3	0	48
	Education 102-Children's & Adolescent Literature	3	3	0	48
	English 250-World Literature	3	3	0	48
	Psychology 101-General Psychology	3	3	0	48
	**Elective	3-4	3-4	0	48-64
		15-16	15-16	0	240-258

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
LS 40	Books and Writers in Literature and Science	3	3	0	48
LS 42	Audio-Visual Materials	2	3	0	32
LS 44	The Library: Its Patrons and Purpose	3	3	0	48
BS 23	Office Practices	2	2	1	48
	English 251-World Literature	3	3	0	48
	**Elective (Foreign Language or Science)	3-4	3-4	0	48-64
		16-17	17-18	1	272-288

*Subject to waiver on basis of skill evidenced by examination.
**From Liberal Arts and Sciences.

Required high school subjects: One year of mathematics; one year of science.

COURSE DESCRIPTIONS / *library science department*

BS 10 TYPEWRITING 2 Cr. - 80 Hrs.

Foundation in typing skill; familiarization with typewriter; fundamentals of touch typing; mechanical parts; speed; accuracy; business letters and forms.

BS 20 TYPEWRITING 2 Cr. - 80 Hrs.

Advanced typing practices production typing; special skill techniques; advanced letter writing; tabulation reports; legal forms and documents; clerical duties.

BS 23 OFFICE PRACTICE 2 Cr. - 48 Hrs.

Operation of ditto, mimeograph, dictating and transcribing machines; general office practices.

LS 10 INTRODUCTION TO LIBRARIES AND BOOKS 3 Cr. - 48 Hrs.

Survey of historical development of books, libraries, and librarianship: evolution of alphabet; early forms of books; libraries in ancient world; middle ages and modern times; invention of printing.

LS 11 and LS 21 INTERNSHIP I AND II 3 Cr. - 144 Hrs.

Practical experience in library activities: circulation, reference, registration; work in service areas: adult, children, reference, extension programs, bookmobile; observation made to determine area best suited for student.

LS 15 and LS 30 TECHNICAL SERVICES I AND II 3 Cr. - 80 Hrs.

Theory and experience in tasks in general area of technical services: cataloging and classification, mechanical preparation of material, acquisition of material, maintenance of library material, book stock control, preparation for bindery.

LS 31 AIDS AND PRINCIPLES OF BOOK SELECTION AND BIBLIOGRAPHY 3 Cr. - 48 Hrs.

Introduction to principles of selection; basic aids and reference tools used; evaluation of a library's material in relation to its public.

LS 40 BOOKS AND WRITERS IN LITERATURE AND SCIENCE 3 Cr. - 48 Hrs.

Survey of major periods in history of world literature; familiarization with individual writers.

LS 41 INTRODUCTION TO REFERENCE 3 Cr. - 48 Hrs.

Philosophy and techniques of reference work; basic reference books: encyclopedias, etc.

LS 42 AUDIO-VISUAL MATERIALS 2 Cr. - 32 Hrs.

Use of film, recordings, projection equipment, duplicating devices and other equipment.

LS 44 THE LIBRARY: ITS PATRONS AND PURPOSE 3 Cr. - 48 Hrs.

Examination of social relationships of library and library worker to patrons, community, country, college campus, public schools.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

BUSINESS ADMINISTRATION 205 - AUTOMATIC DATA PROCESSING 3 Cr. - 48 Hrs.

Introduction to automatic data processing. Concepts and operation of unit record equipment, basic computer systems and programming. Techniques, data files and case studies application.

EDUCATION 102 CHILDREN'S AND ADOLESCENT LITERATURE 3 Cr. - 48 Hrs.

Comprehensive survey of children's and young adults' literature. Primarily designed to provide a basic knowledge and understanding of authors, illustrators, and basic material as an aid and background for work in a public area.

ENGLISH 101 AND 102 ENGLISH COMPOSITION 6 Cr. - 96 Hrs.

Basic composition involving language structure, rhetorical principles, readings in expository prose, and orderly, clear writing. Second semester includes study of four American novels.

ENGLISH 250 AND 251 — WORLD LITERATURE 6 Cr. - 96 Hrs.

The reading of literature expressing western man's belief in the paramount importance of the individual. Second semester includes survey of representative works of continental Europe to the present.

HISTORY 101 WORLD HISTORY 3 Cr. - 48 Hrs.

Survey and analysis of major intellectual and political developments of world civilization from ancient times until 18th century including cultural problems and ideas.

PSYCHOLOGY 101 GENERAL PSYCHOLOGY 3 Cr. - 48 Hrs.

Introduction to the science of human behavior.

MACHINE SHOP DEPARTMENT / Career Programs

LYNN B. HARLAN, Chairman

Associate Degree

TT Toolmaking Technology

Certificate

MG Machinist General

TOOLMAKING TECHNOLOGY (TT)

Associate Degree / Two Years

The Toolmaking Technology Program will qualify you to work with the engineer and shop superintendent or foreman. To insure your efficiency in this position, two-thirds of your time will be spent in the lab or shop where you will be trained to develop machine operation skills. Emphasis will also be placed on blue print reading, mechanical drawing, and theory. Technical writing, including the routing of jobs and the sequence of operations, as well as related courses in mathematics, science, and economics are included to increase your advancement opportunities.

Types of Jobs: Toolmaker; experimental, numerical controller; production technician; administrative assistant.

Job Opportunities: Unlimited with excellent starting salaries and rapid advancement.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
TT 10	Bench/Drill Press	2	1	3.5	72
TT 11	Engine Lathe	4	2	6	128
TT 12	Milling Machine	4	2	6	128
TT 13	Shaper	1	0	4	64
		18	12	20.5	520

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
ED 01	Mechanical Drawing	2	0	6	64
TT 20	Turret Lathe/Automatic Screw Machine	3	1	6.5	120
TT 21	Quality Control/Blueprint Reading	4	2	6	128
	Physical Education 101	1	0	2	32
		17	10	21.5	472

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
EC 11	Economics	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
TT 30	Bench/Jig Borer	2	0	6.5	104
TT 31	Engine Lathe	4	2	6	128
TT 32	Milling Machine	4	2	6	128
	Physical Education 102	1	0	2	32
		18	11	20.5	504

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 22	Introduction to Metallurgy	4	4	0	64
TT 40	Grinding Machines	7	2	16.5	296
TT 41	Heat Treating	4	2	8	160
		15	8	24.5	520

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

MACHINIST GENERAL (MG)

Certificate / Two Years

The Machinist General Program offers you training on machine tools that are common to most shops and emphasizes skill with machines rather than academic subjects. Class discussions on various jobs and machine operations in the shop will increase your abilities as a machinist. Some training in mathematics, science, and communications skills are included to enable you to keep up with future developments and to be eligible for promotions.

Types of Jobs: Machinist, machine repair mechanic, setup man for production line work, skilled tool-room mechanic.

Job Opportunities: Never have the opportunities been so great for men trained in the mechanical field; jobs are available nationally with excellent starting salaries and unlimited chances for advancement.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MG 11	Basic Machine Shop	0	26	416
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
		6	26	512

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MG 12	Basic Machine Shop	0	26	416
GM 20	Algebra or GM 30	3	0	48
TE 02	Communications II or TE 21	3	0	48
		6	26	512

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MG 13	Advanced Machine Shop	0	26	416
ED 01	Mechanical Drawing	0	4	64
	Physical Education 101	0	2	32
		0	32	512

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
MG 14	Advanced Machine Shop	0	26	416
GS 20	Physical Science	3	0	48
EC 02	Economics or EC 11	3	0	48
		6	26	512

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *machine shop department*

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

MG 11 BASIC MACHINE SHOP 416 Hrs.

Elementary bench work; use of hand tools; operation and care of drill press, engine lathe, milling machine, shaper; blueprint reading.

MG 12 BASIC MACHINE SHOP 416 Hrs.

Care and sequence of operation of turret lathe and automatic screw machines; inspection practices; use of precision measuring equipment; advanced blueprint reading; freehand sketching.

MG 13 ADVANCED MACHINE SHOP 416 Hrs.

Advanced training on drill press, jig borer, engine lathe, milling machines and shaper; phase will cover gear cutting, precision boring and die work.

MG 14 ADVANCED MACHINE SHOP 416 Hrs.

Use of grinding machines for cylindrical, internal surfaces; tool and cutter and thread grinding; various phases of heat treating: normalizing, carburizing; hardening and tempering various types of steel.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

TS 22 INTRODUCTION TO METALLURGY

For course description, see Science Department, page 199.

TT 01 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.

Elementary machine shop work on bench, drill press, shaper, engine lathe, milling machines.

TT 02 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.

Setup and operation of turret lathes and automatic screw machines; introduction to quality control; use of precision instruments.

TT 03 BASIC MACHINE SHOP 2 Cr. - 96 Hrs.

Use and types of grinding machines and wheels; cylindrical, internal and surface grinding; introduction to heat treating.

TT 10 BENCH/DRILL PRESS 2 Cr. - 72 Hrs.

Use of hand tools to produce layouts and objects by hand; simple filing, sawing, assembling; types of drill presses; drill sharpening; drilling to a layout; drill jigs.

TT 11 ENGINE LATHE 4 Cr. - 128 Hrs.

Tool bit grinding; turning; facing; boring; thread cutting.

TT 12 MILLING MACHINE 4 Cr. - 128 Hrs.

End, slab, and straddle milling; all types of straight and plain milling.

TT 13 SHAPER 1 Cr. - 64 Hrs.

Producing parallel and square surfaces; shaping rectangular objects.

TT 20 TURRET LATHE/AUTOMATIC SCREW MACHINES 3 Cr. - 120 Hrs.

Setup and operation of machines; sequence of operations and tooling; cam development.

TT 21 QUALITY CONTROL/BLUEPRINT READING 4 Cr. - 128 Hrs.

Use of precision instruments; reading mechanical drawings; controlling quality of work by sampling method.

TT 30 BENCH/JIG BORER 2 Cr. - 104 Hrs.

Advanced precision filing; fitting, lapping, and assembling of precision parts required on dies, jigs and fixtures; boring holes to very close dimensions and locations, using micrometer measuring instruments on machines.

TT 31 ENGINE LATHE 4 Cr. - 128 Hrs.

Advanced turning and face plate work; thread cutting of all types; taper work.

TT 32 MILLING MACHINE 4 Cr. - 128 Hrs.

Producing spur, helical and bevel gears; indexing, spiral and cam milling; milling punches and dies.

TT 40 GRINDING MACHINES 7 Cr. - 296 Hrs.

Cylindrical, internal, surface, tool and cutter grinding; thread grinding of studs, taps; special threads.

TT 41 HEAT TREATING 4 Cr. - 160 Hrs.

Normalizing, carburizing, hardening, and tempering of various types of steel; heat treatment of metals.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

COURSE DESCRIPTIONS / *mathematics department*

FRED BIERLY, Department Chairman

GM 10 ARITHMETIC 48 Hrs.

Presentation of fundamental operations with whole numbers, common and decimal fractions, basic principles of mensuration, percentage and averages.
(May be exempted by passing an Advanced Placement Exam)

GM 20 ALGEBRA 48 Hrs.

Presentation of fundamental operations of algebra: symbols, equations, ratio and proportion, exponents, radicals, and formulas; special emphasis on shop application.
Prerequisite: GM 10 or Advanced Placement Examination in Arithmetic

GM 30 GEOMETRY-TRIGONOMETRY 48 Hrs.

Simple geometric concepts and solutions involving constructions; right, acute, and oblique triangles; emphasis on shop application.
Prerequisite: GM 20 or Advanced Placement Examination in Algebra

GM 45 SPECIAL TOPICS 48 Hrs.

Designed for students with a special interest in mathematics; consists of special topics determined by needs and interests of students; offered only when sufficient interest exists.
Prerequisite: GM 20 or equivalent

*TM 01 BASIC ALGEBRA 48 Hrs.

Designed to help technical student identify and develop basic algebraic skills needed for the technician program; covers four fundamental operations: equations and graphs; special products and factoring; fractions, roots and exponents; and logarithms.

*TM 03 BASIC GEOMETRY 48 Hrs.

Designed to give student a basic understanding of concepts of lines, angles, triangles; basic geometric relations; general mensuration; geometric constructions.
Prerequisite: One year of high school algebra or TM 01

TM 11 BUSINESS ALGEBRA 3 Cr. - 48 Hrs.

Offered primarily for business technologies; review of arithmetic and basic algebra; functions and graphs; systems of linear equations; exponents and radicals; quadratic equations with one unknown; ratio; proportion; variation.

TM 13 ALGEBRA 4 Cr. - 80 Hrs.

Presentation of mathematical background necessary for most technician programs; review of basic algebra: functions and graphs, linear equations, logarithms, simultaneous equations, quadratics, ratio, variation and proportion, binomial theorem and progressions, exponential functions and simple curve fitting; one hour per week learning computation methods including handbooks, slide rule.
Prerequisite: TM 03 or two years of high school mathematics, including algebra and geometry or equivalent

TM 21 TRIGONOMETRY 4 Cr. - 80 Hrs.

Consists of right traingle and oblique triangle trigonometry, trigonometric applications, vectors, trigonometric formulas, identities and equations, graphs of the trigonometric functions, complex numbers and the J-operator; one hour per week continuing use of computation aids.
Prerequisite: TM 13 or equivalent

TM 23 FINITE MATHEMATICS-STATISTICS 5 Cr. - 80 Hrs.

Introduction to matrices, determinants, and statistics; vectors; mathematical systems; inverse matrix; elementary matrix transformation; systems of linear equations; vector spaces; linear transformations; variability; normal curve; mean; standard deviation; analysis of variance; probability.
Prerequisite: TM 13 or equivalent

TM 25 BUSINESS MATHEMATICS 3 Cr. - 48 Hrs.

Study of mathematics as it applies to installment buying, discounting, notes and drafts; insurance contracts; property and income taxes; social security; stocks and bonds and transportation; preparation of graphs; use of measurements and business records.

TM 31 CALCULUS I 3 Cr. - 48 Hrs.

Designed to meet needs of technician without getting involved in mathematical theory or concepts necessary for more advanced engineer; graphical methods of calculus; differentiations through implicit functions; integration; volume by integration; Simpson's Rule.
Prerequisite: TM 21 or equivalent

TM 40 INTRODUCTORY INDUSTRIAL STATISTICS 3 Cr. - 48 Hrs.

Presentation of basic concepts of probability and statistics related to manufactured product; histograms; random variables; frequency distributions; introduction to tests of hypotheses; theory of estimation with illustrations from applied fields.
Prerequisite: TM 13 or equivalent

TM 41 CALCULUS II 3 Cr. - 48 Hrs.

Continuation of TM 31; emphasis on applications, centroids and moments, radius of gyration; introduction to differential equations; data plotting.
Prerequisite: TM 31 or equivalent

TM 45 SPECIAL TOPICS 3 Cr. - 48 Hrs.

Designed for students with special interest in mathematics; special topics determined by need and interests of students; offered only when sufficient interest exists.
Prerequisite: TM 21 or equivalent

*For students whose tests indicate a need for this type of preparation before they can pursue more advanced courses.

OFFICE MACHINE REPAIR DEPARTMENT / Career Programs

GEORGE W. GESLER, Chairman

Associate Degree

OM Office Machine Technology

Certificate

OR Office Machine Repairman

OFFICE MACHINE TECHNOLOGY (OM)

Associate Degree / Two Years

Outstanding opportunities are yours as a technician in the office machine industry. Since emphasis on labor-saving devices has increased, the need for men skilled in the servicing and repairing of office machines has more than doubled. Your training will include detailed machine operation, component parts and section analysis, machine trouble diagnosis, and machine testing procedures.

Types of Jobs: Engineering assistant, manufacturers' service representative, shop foreman in independently owned agencies, technical assistant, and office equipment salesman.

Job Opportunities: Unlimited with excellent salary potential and opportunities for further industry-financed education.

FIRST SEMESTER

		Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
OM	11	Introduction to typewriters	3	1	6	112
OM	12	Typewriter Service Work	4	1	9	160
BS	09	Typewriting	1	0	3	48
TM	13	Algebra	4	4	1	80
TE	11	English Composition	3	3	0	43
ED	01	Mechanical Drawing	2	1	3	64
			17	10	22	512

SECOND SEMESTER

		Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
OM	21	Disassembly and Reassembly	5	1	12	208
OM	22	Electric Typewriters	2	0	6	96
TM	21	Trigonometry	4	4	1	80
TE	21	Speech	3	3	0	48
BM	31	Business Law	3	3	0	48
		Physical Education 101	1	0	2	32
			18	11	21	512

THIRD SEMESTER

		Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
OM	31	Adding Machine Service	4	1	9	160
OM	32	Adding Machine Sections	3	1	6	112
OM	33	Motor Circuits	1	0	3	48
TS	21	Physics-Mechanics	4	4	0	64
EC	11	Economics	3	3	0	48
		Physical Education 102	1	0	2	32
			16	9	20	464

FOURTH SEMESTER

		Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
OM	41	Duplicating Machine Service	2	0	6	96
OM	42	Introduction to Calculators	3	2	3	80
OM	43	Office Machine Business Management	2	2	0	32
CS	01	Introduction to Data Processing	3	3	1	64
TS	31	Physics-Electricity & Magnetism	4	4	0	64
		*Elective	2	0	6	96
		*Elective	2	1	3	64
			18	12	19	496

*Electives: *OM 44 Stencil Duplicator Repairing; OM 45 Introduction to Electrostatic Copying Machines.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

OFFICE MACHINE REPAIRMAN (OR)

Certificate / Two Years

This program will train you to perform periodic inspections and to make repairs on different types of office equipment. Related courses such as mathematics, typing, and economics will give you a well-rounded background for advancements in this field. (If you have a physical handicap, you may find this field to be a solution to your vocational need.)

Types of Jobs: Typewriter, adding machine, duplicator serviceman; manufacturers' service representative; shop foreman in distributor outlet; branch service manager for company owned shop; self-employment.

Job Opportunities: Ever increasing demand for personnel to service and repair all types of office equipment; salary rating good to excellent depending on complexity of equipment.

FIRST SEMESTER

		Course	Hrs. Lect.	Week Lab.	Total Sem.
OR	10	Office Machine Repair I	0	25	400
TE	01	Communications I or TE 11	3	0	48
BS	09	Typewriting	3	0	48
			6	25	496

SECOND SEMESTER

		Course	Hrs. Lect.	Week Lab.	Total Sem.
OR	20	Office Machine Repair II	0	25	400
TE	02	Communications II or TE 21	3	0	48
GM	10	Arithmetic or GM 20	3	0	48
			6	25	496

THIRD SEMESTER

		Course	Hrs. Lect.	Week Lab.	Total Sem.
OR	30	Office Machine Repair III	0	25	400
GM	20	Algebra or GM 30	3	0	48
		Physical Education 101	2	0	32
			5	25	480

FOURTH SEMESTER

		Course	Hrs. Lect.	Week Lab.	Total Sem.
OR	40	Office Machine Repair IV	0	25	400
GS	20	Physical Science or TS 21	3	0	48
EC	02	Economics or EC 11	3	0	48
			6	25	496

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS /*office machine repair department*

BM 31 ELECTIVE-BUSINESS LAW

For course description, see Business Administration Department, page 105.

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 01 INTRODUCTION TO DATA PROCESSING

For course description, see Computer Science Department, page 110.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 ELECTIVE-MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

OM 11 INTRODUCTION TO TYPEWRITERS 3 Cr. - 112 Hrs.

Study of component parts of standard typewriters; testing of operational functions; study of ribbons, machine models, rubber parts, and cleaning methods.

OM 12 TYPEWRITER SERVICE WORK 4 Cr. - 160 Hrs.

Training to perform periodic inspection service for preventive maintenance; analysis of the backspacer, margins, tabulator, escapement, ribbon feed and reverse, bichrome, shift, and paper feed sections.

OM 21 DISASSEMBLY AND REASSEMBLY 5 Cr. - 208 Hrs.

Disassembly and reassembly to study machine structure, relationships of sections, sequence of component parts; repair of individual parts and sections of typewriters; trade procedure for cleaning, oiling, and adjusting.

OM 22 ELECTRIC TYPEWRITERS 2 Cr. - 96 Hrs.

Electric typewriters introduced to familiarize student with drive, power roll, type action, and controlled operation of machines.

OM 31 ADDING MACHINE SERVICE 4 Cr. - 160 Hrs.

History, business use, and component sections of adding machines; operation of full keyboard and ten-key adding machine; training to perform periodic inspection service for preventive maintenance.

OM 32 ADDING MACHINE SECTIONS 3 Cr. - 112 Hrs.

Correction of prominent mechanical problems; introduction to credit-balance adding machines.

OM 33 MOTOR CIRCUITS 1 Cr. - 48 Hrs.

Theory and practical work on electrical circuits and power transmission on office machines.

OM 41 DUPLICATING MACHINE SERVICE 2 Cr. - 96 Hrs.

Theory, operation, and service of stencil duplicators; lettering and layout; use of scope; machine set-up; color changing.

OM 42 INTRODUCTION TO CALCULATORS 3 Cr. - 80 Hrs.

Introductory study of semi-automatic and automatic rotary calculators.

OM 43 OFFICE MACHINE BUSINESS MANAGEMENT 2 Cr. - 32 Hrs.

Presentation of business management program to enable student to understand work processes of office machine trade.

OM 44 ELECTIVE-STENCIL DUPLICATOR REPAIRING 2 Cr. - 96 Hrs.

Designed for students choosing to work for duplicator machine company; detailed adjustment and reconditioning work.

OM 45 ELECTIVE-INTRODUCTION TO ELECTROSTATIC COPYING MACHINES 2 Cr. - 64 Hrs.

Designed for students considering employment with manufacturers of electrostatic copying machines; fundamentals, service procedures introduced.

OR 10 OFFICE MACHINE REPAIR I 400 Hrs.

Typewriter operation; functional testing; trade history; machine development, rubber parts; ribbons; machine models; training to perform periodic preventive maintenance inspections.

OR 20 OFFICE MACHINE REPAIR II 400 Hrs.

Analysis of typewriter sections and understanding of components; assembly and reassembly of machines to develop manipulative skills; trade procedures and job standards; drive, power roll, type action, and controlled operations of electric typewriters.

OR 30 OFFICE MACHINE REPAIR III 400 Hrs.

History, business use, and sectional components of adding machines; operation and testing of ten-key and full keyboard adding machines; servicing, adjusting, and repair of mechanical problems.

OR 40 OFFICE MACHINE REPAIR IV 400 Hrs.

Stencil duplicating arts; duplicator operation and service; office machine business management program.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TE 21 SPEECH

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS

For course description, see Science Department, page 199.

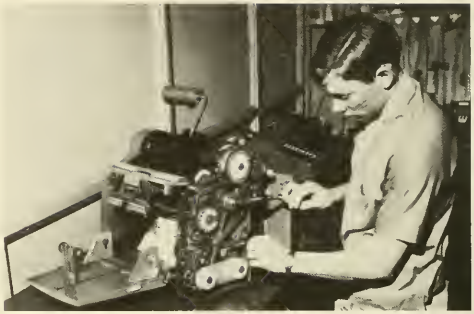
TS 31 PHYSICS-ELECTRICITY & MAGNETISM

For course description, see Science Department, page 199.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.



PATTERNMAKING DEPARTMENT / Career Program

WILLIAM G. HITCHENS, Chairman

Certificate

WP Wood Patternmaking

WOOD-PATTERNMAKING (WP)

Certificate / Two Years

The Wood-Patternmaking Program offers you training on all types of woodworking equipment commonly used in patternshops. In addition, you will receive training in the care and use of hand tools required of the patternmaker. As a patternmaker, you will become skilled in preparing, shaping, or building wood and other adaptable materials into models to be used in preparing molds for casting any of the required shapes in modern industry.

Types of Jobs: Patternmaker, cabinet maker, model maker, woodworking machine operator, production woodworker.

Job Opportunities: Unlimited with good starting salaries.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GM 10	Arithmetic or GM 20	3	0	48
TE 01	Communications I or TE 11	3	0	48
ED 01	Mechanical Drawing	0	4	64
WP 10	Wood Patternmaking	0	22	352
		6	26	512

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GM 20	Algebra or GM 30	3	0	48
TE 02	Communications II or TE 21	3	0	48
WP 20	Wood Patternmaking	0	26	416
		6	26	512

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
EC 02	Economics or EC 11	3	0	48
WP 30	Wood Patternmaking	0	26	416
	Physical Education 101	2	0	32
		5	26	496

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
GS 20	Physical Science or TS 21	3	0	48
WP 40	Wood Patternmaking	0	26	416
	*Elective	3	0*	48
		6	26	512

*Elective: *ED 12 Industrial Processes or TW 10 Design Wood.*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS /*wood-patternmaking department*

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

ED 12 INDUSTRIAL PROCESSES

For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

WP 10 WOOD PATTERNMAKING 352 Hrs.

Designed to give basic knowledge of making patterns, using wood working machines; methods of gluing lumber to produce strength.

WP 20 WOOD PATTERNMAKING 416 Hrs.

Types of construction of patterns and core boxes used in molding practices.

WP 30 WOOD PATTERNMAKING 416 Hrs.

Advanced skills in wood patternmaking: jigs and fixtures, special types of patterns-loose pieces, interchangeable pieces.

WP 40 WOOD PATTERNMAKING 416 Hrs.

Knowledge of production type patterns, master patterns, match plate work; checking of patterns and core boxes.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 1 Cr. - 32 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

PLUMBING DEPARTMENT / Career Programs

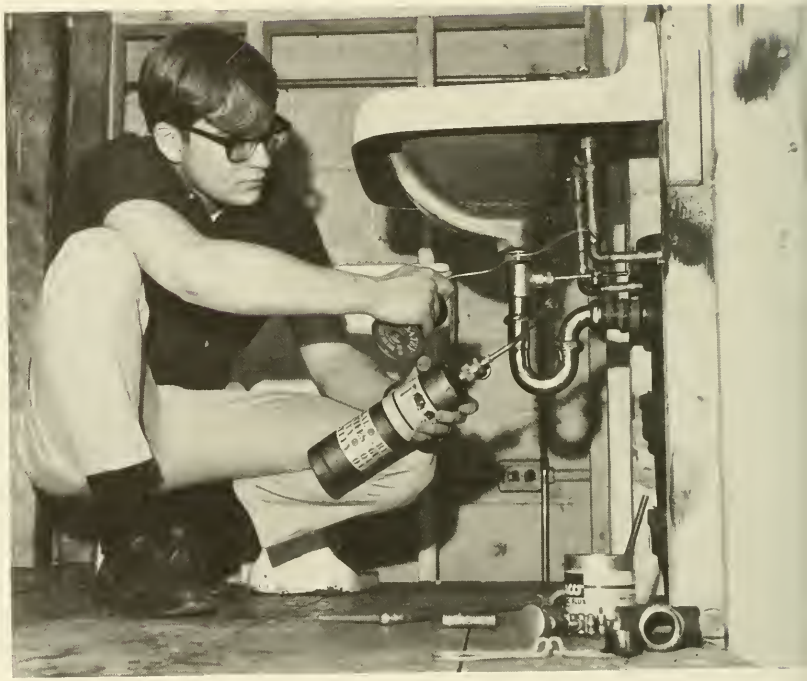
FRANK A. McGINN, Chairman

Associate Degree

PT Plumbing and Heating Technology

Certificate

PL Plumbing and Heating



PLUMBING AND HEATING TECHNOLOGY (PT)

Associate Degree / Two Years

The Plumbing and Heating Technology Program will qualify you as a plumbing and heating technician who will understand current trade problems and who will be prepared to adapt to future developments in the technology. The program specifics cover all phases of the plumbing and heating field to insure mastery of vocational skills and include the academic education necessary for advancement and personal growth.

Types of Jobs: Plumbing and heating technician, estimator; design layout field; construction technician consultant; sales representative, etc.

Job Opportunities: Good with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
PT 11	Use of Tools, Plumbing Math, Septic Tanks	5	2	9	176
PT 13	Building Maintenance	2	0	6	96
PT 15	Steam Heating (Basic)	3	1	6	112
		17	10	22	512

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
PT 21	Venting and Drainage (Basic)	3	1	6	112
PT 23	Building Maintenance	2	0	6	112
PT 24	Lead Working (Basic)	3	1	6	112
PT 25	Hot Water Heating	2	1	3	64
		17	10	22	528

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 21	Physics-Mechanics	4	4	0	64
PT 30	Water Distribution	3	1	6	112
PT 32	Blueprint Reading and Estimating	3	3	0	48
PT 33	Building Maintenance (Advanced)	2	0	6	96
PT 35	Steam & Hot Water Heating (Advanced)	3	0	9	144
	Physical Education 101	1	0	2	32
		16	8	23	496

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 32	Physics-Heat & Light	3	3	0	48
EC 11	Economics	3	3	0	48
PT 41	Venting and Drainage (Advanced)	2	1	6	112
PT 44	Lead Wiping	2	0	6	96
WE 01	Acetylene Welding	2	0	5	80
WE 02	Electric Welding	2	0	5	80
	Physical Education 102	1	0	2	32
		15	7	24	496

Electives: *TS 22 Introduction to Metallurgy; TM 31 Calculus I. (For students entering with advanced placement.)*
Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

PLUMBING AND HEATING (PL)

Certificate / Two Years

As a student in the Plumbing Program, you will be taught the basic theories of plumbing and heating, soil waste and vent layout, household and industrial maintenance, sewage systems, and the use of hand and power tools. The fundamentals of communications and mathematics will also be covered, and you will be trained in all types of plumbing and heating repair work to insure job choice and top pay when you graduate.

Types of Jobs: Plumbing and heating installation, industrial maintenance, public utilities service, machine work, and ship building industries, etc..

Job Opportunities: Excellent starting wages and opportunities for rapid advancements.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
PL 11	Plumbing & Heating	0	25	400
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
		6	25	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
PL 12	Plumbing & Heating	0	25	400
TE 02	Communications II or TE 21	3	0	48
GM 20	Algebra or GM 30	3	0	48
		6	25	496

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
PL 13	Plumbing & Heating	0	25	400
EC 02	Economics or EC 11	3	0	48
GS 20	Physical Science or TS 21	3	0	48
	Physical Education 101	2	0	32
		8	25	528

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
PL 14	Plumbing & Heating	0	25	340
WE 01	Welding	0	4	80
WE 02	Welding	0	4	80
		0	33	500

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *plumbing department*

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

EC 11 ECONOMICS

For course description, see Economics Department, page 128.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

PL 11 PLUMBING & HEATING 400 Hrs.

Introduction to plumbing and heating trade; use of hand and power tools; safety procedures; basic lead working; venting and drainage; septic tanks and water distribution.

PL 12 PLUMBING & HEATING 400 Hrs.

Materials and methods for venting bathrooms; blueprint reading and estimating; use of lead working tools; bending lead pipe; preparing lead pipe for wiping; building maintenance. Individual projects and live work.

PL 13 PLUMBING & HEATING 400 Hrs.

Lead working; steam and hot water heating systems; theory of circulation in hot and cold water distribution to all types of fixtures. Individual projects and live work.

PL 14 PLUMBING & HEATING 400 Hrs.

Advanced venting and drainage of all types of plumbing systems; testing of plumbing; preparing and wiping lead joints; tricks of the trade; building maintenance. Live work.

PT 11 USE OF TOOLS, PLUMBING MATHEMATICS & SEPTIC TANKS 5 Cr. - 176 Hrs.

Tools and techniques of pipe fitting; related drafting instructions; installation of septic tanks and cesspools.

PT 13 BUILDING MAINTENANCE 2 Cr. - 96 Hrs.
Installation, care and repair of valves, piping, vents, pumps, and fixtures.

PT 15 STEAM HEATING BASIC 3 Cr. - 112 Hrs.
Types, application, and repair of steam and hot water heating systems and their components.

PT 21 VENTING AND DRAINAGE BASIC 3 Cr. - 112 Hrs.
Materials and methods for venting bathrooms and draining plumbing systems.

PT 23 BUILDING MAINTENANCE 2 Cr. - 112 Hrs.
Continuation of PT 13; opening stopped waste and soil lines.

PT 24 LEAD WORKING (BASIC) 3 Cr. - 112 Hrs.
Types of corners; patterns for cutting and preparing sheet lead.

PT 25 HOT WATER HEATING 2 Cr. - 64 Hrs.
Continuation of PT 15.

PT 30 WATER DISTRIBUTION 3 Cr. - 112 Hrs.
Installation of hot and cold water systems from mains and heaters to fixtures.

PT 32 BLUEPRINT READING AND ESTIMATING 3 Cr. - 48 Hrs.
Signs and symbols for blueprint reading; use of estimating sheets; labor materials; take-off estimating of materials; isometric drawing; trade terms.

PT 33 BUILDING MAINTENANCE (ADVANCED) 2 Cr. - 96 Hrs.
Continuation of PT 23.

PT 35 STEAM & HOT WATER HEATING (ADVANCED) 3 Cr. - 144 Hrs.
Continuation of PT 25.

PT 41 VENTING AND DRAINAGE (ADVANCED) 2 Cr. - 112 Hrs.
Continuation of PT 21.

PT 44 LEAD WIPING 2 Cr. - 96 Hrs.
Principles and practice in the preparing and wiping of pipe joints.

TE 01 COMMUNICATIONS I
For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II
For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION
For course description, see English Department, page 143.

TE 21 SPEECH
For course description, see English Department, page 143.

TM 13 ALGEBRA
For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY
For course description, see Mathematics Department, page 178.

TM 31 CALCULUS I
For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS
For course description, see Science Department, page 199.

TS 22 INTRODUCTION TO METALLURGY
For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT & LIGHT
For course description, see Science Department, page 199.

WE 01 ACETYLENE WELDING
For course description, see Welding Department, page 210.

WE 02 ELECTRIC WELDING
For course description, see Welding Department, page 210.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.
For course descriptions, see Physical Education Department, pages 49 and 50.

PRINTING DEPARTMENT / Career Programs

JACK C. DEIBERT, Chairman

Associate Degree

GA Graphic Arts Management

Certificate

PG Printing

GRAPHIC ARTS MANAGEMENT (GA)

Associate Degree / Two Years

The Graphic Arts Management Program will provide you with a firm understanding of highly diversified backshop operations along with management, marketing and supervisory training. Practical laboratory work with modern graphic arts equipment will give you a sound background in areas of composition, makeup, photo processes, imposition and stripping, platemaking, presswork and bindery.

Types of Jobs: Graphic arts executive trainees, in-plant supervisors, foremen, and self-employed printers.

Job Opportunities: Numerous with excellent starting salaries and opportunities for further industry-financed education.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BM 13	Principles of Business	3	3	0	48
BS 09	Typewriting	1	0	3	48
ED 01	Mechanical Drawing	2	1	3	64
TM 13	Algebra	4	4	1	80
GA 10	Reproduction Processes I	1	1	1	32
GA 11	Preparation for Copy Reproduction	3	1	6	112
GA 12	Principles of Typographic Design	3	1	6	112
		17	11	20	496

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
IM 20	Industrial Organization and Management	3	3	0	48
TE 11	English Composition	3	3	0	48
TM 21	Trigonometry	4	4	1	80
GA 20	Reproduction Processes II	1	0	3	48
GA 23	Process Camera	3	1	6	112
GA 24	Imposition and Stripping	3	1	6	112
	Physical Education 101	1	0	2	32
		18	12	18	480

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
BA 13	Applied Accounting-Managerial	3	3	0	48
IM 31	Supervision-Human Relations	3	3	0	48
TS 21	Physics-Mechanics	4	4	0	64
GA 30	Reproduction Processes III	1	0	3	48
GA 35	Platemaking Processes	3	1	6	112
GA 36	Printing Press Operation	3	1	6	112
	Physical Education 102	1	0	2	32
		18	12	17	464

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
IM 43	Government and Business	2	2	0	32
CS 02	Technical Computer Programming	3	3	1	64
ET 11	Basic Electricity For Electronics	5	5	0	80
TS 32	Physics-Heat & Light	3	3	0	48
GA 40	Printing Estimating Practices	2	0	6	96
GA 41	Printing Production Practices	3	0	10	160
		18	13	17	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high subjects: Algebra and geometry; one year of science.

PRINTING (PG)

Certificate / Two Years

The printing program is designed to train you for the many and complex operations and occupations involved in modern printing. Training emphasis is on the specific occupation for which you show aptitude and interest, but all printing operations are covered to insure your versatility in the field.

Types of Jobs: Cameraman, stripper, layout man, compositor, platemaker, and pressman.

Job Opportunities: Good with excellent starting salaries.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
BS 09	Typewriting	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
TE 01	Communications I or TE 11	3	0	48
PG 11	Copy Preparation I	2	9	176
PG 12	Typographic Composition I	2	12	224
		13	21	544

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
ED 01	Mechanical Drawing	1	3	64
GM 20	Algebra or GM 30	3	0	48
PG 23	Photo Process I	2	11	208
PG 24	Imposition and Stripping I	2	11	208
		8	25	528

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
TE 02	Communications II or TE 21	3	0	48
EC 02	Economics or EC 11	3	0	48
GS 20	Physical Science or TS 21	3	0	48
PG 35	Platemaking I	2	6	128
PG 36	Press Operation I	2	15	272
		13	21	544

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
PG 40	Materials of Printing Production	2	1	48
	Business Elective	3	0	48
	*Printing Elective	2	10	192
	*Printing Elective	2	10	192
	Physical Education 101	0	2	32
		9	23	512

*Electives: *PG 41 Copy Preparation II; PG 42 Typographic Composition II; PG 43 Photo Process II; PG 44 Imposition and Stripping II; PG 45 Platemaking II; PG 46 Press Operation II.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *printing department*

BA 13 APPLIED ACCOUNTING-MANAGERIAL

For course description, see Business Administration Department, page 104.

BM 13 PRINCIPLES OF BUSINESS

For course description, see Business Administration Department, page 104.

BS 09 TYPEWRITING

For course description, see Business Administration Department, page 105.

CS 02 TECHNICAL COMPUTER PROGRAMMING

For course description, see Computer Science Department, page 110.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

ED 01 MECHANICAL DRAWING

For course description, see Drafting Department, page 124.

ET 11 BASIC ELECTRICITY FOR ELECTRONICS

For course description, see Electronics Department, page 141.

GA 10 REPRODUCTION PROCESSES I 1 Cr. - 32 Hrs.

Introduction to equipment and materials used in various fields of printing and publishing; desirable qualifications of worker.

GA 11 PREPARATION FOR COPY REPRODUCTION 3 Cr. - 112 Hrs.

Analysis of materials, tools and techniques used in preparation of copy for reproduction; paste-up and color separation overlays.

GA 12 PRINCIPLES OF TYPOGRAPHIC DESIGN 3 Cr. - 112 Hrs.

Training in conventional and modern layouts as applied to solution of problems in printing typography.

GA 20 REPRODUCTION PROCESSES II 1 Cr. - 48 Hrs.

Methods of photographic reproduction of engineering draw-

ings, direct image, stabilization process, photo fabrication and microfilming.

GA 23 PROCESS CAMERA 3 Cr. - 112 Hrs.

Concepts and techniques of darkroom procedures for reproduction of line and halftone copy on process cameras.

GA 24 IMPOSITION AND STRIPPING 3 Cr. - 112 Hrs.

Consideration of binding and register requirements to assure quality control of various stripping mediums and formats.

GA 30 REPRODUCTION PROCESSES III 1 Cr. - 48 Hrs.

Concepts of letterpress, letterset, lithography, intaglio, flexography, gravure and screen process in relation to printing production requirements of graphic arts industry.

GA 35 PLATEMAKING PROCESSES 3 Cr. - 112 Hrs.

Knowledge of deep-etch and surface platemaking processes; preparation, exposure techniques; methods and tools for making corrections; plate troubles, causes, and remedies.

GA 36 PRINTING PRESS OPERATION 3 Cr. - 112 Hrs.

Correlation of printing press operation; ink mixing and matching; registration; preventive maintenance for quality analyses.

GA 40 PRINTING ESTIMATING PRACTICES 2 Cr. - 96 Hrs.

Lab class offering experience in estimating jobs, writing specifications, and planning jobs for production.

GA 41 PRINTING PRODUCTION PRACTICES 3 Cr. - 160 Hrs.

Lab instruction relating to studies in first three semesters; firsthand opportunity to forecast production, route and plan, schedule, dispatch, inspect, control stores and stock; material handling, personnel management and industrial engineering.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

IM 20 INDUSTRIAL ORGANIZATION AND MANAGEMENT

For course description, see Industrial Management Department, page 160.

IM 31 SUPERVISION-HUMAN RELATIONS

For course description, see Industrial Management Department, page 160.

IM 43 GOVERNMENT AND BUSINESS

For course description, see Industrial Management Department, page 160.

PG 11 COPY PREPARATION I 176 Hrs.

Analysis of copy; preparation of roughs and working layouts; arrangement and paste-up of art work, photographic and typographic material.

PG 12 TYPOGRAPHIC COMPOSITION I 224 Hrs.

Fundamentals, application, operation and routine care of composing machines; essentials of copy markup and proofreading.

PG 23 PHOTO PROCESS I 208 Hrs.

Theory and lab experiences on process cameras for reproduction of line and halftone copy; procedures in processing and contact printing.

PG 24 IMPOSITION AND STRIPPING I 208 Hrs.

Imposition: theory and practice of folding, binding, and register methods; stripping: procedures and mediums used in photographic expedients for various formats.

PG 35 PLATEMAKING I 128 Hrs.

Theory and lab experiences relating to various types of plates and processing procedures; essentials of precise registration.

PG 36 PRESS OPERATION I 272 Hrs.

Theory and lab experiences in preparation and operation of pressroom equipment; essentials of preventive maintenance.

PG 40 MATERIALS OF PRINTING PRODUCTION 48 Hrs.

Properties of papers and inks used in printing industry; printers' measurements, proportion, percentage; paper sizes and computations used in connection with printing production.

PG 41 COPY PREPARATION II 192 Hrs.

Advanced copy-fitting and preparation of roughs and working layouts; advanced mechanical assemblies; overlays and pre-separation of color.
Prerequisite: PG 11

PG 42 TYPOGRAPHIC COMPOSITION II 192 Hrs.

Lab experiences and exercises on photo, cold and hot composition machines; photo-composing of heads and ads; justified text.
Prerequisite: PG 12

PG 43 PHOTO PROCESS II 192 Hrs.

Advanced theory and lab experiences on process cameras, densitometry, color separation, masking requirements and color proofing systems.
Prerequisite: PG 23

PG 44 IMPOSITION AND STRIPPING II 192 Hrs.

Imposition: advanced procedures used in pagination; stripping: extension of techniques and procedures in single and multi-color forms.
Prerequisite: PG 24

PG 45 PLATEMAKING II 192 Hrs.

Advanced course in platemaking procedures for various types of plates and proofing materials; experience providing application of various types of systems to insure register.
Prerequisite: PG 35

PG 46 PRESS OPERATION II 192 Hrs.

Advanced course in press setup for various formats including work and turn, work and tumble, sheet wise forms, and exercises in four-color process printing.
Prerequisite: PG 36

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II

For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION

For course description, see English Department, page 143.

TM 13 ALGEBRA

For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY

For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICSS

For course description, see Science Department, page 199.

TS 32 PHYSICS-HEAT & LIGHT

For course description, see Science Department, page 199.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

COURSE DESCRIPTIONS / *science department*

RAMON PALMER, Department Chairman

GS 20 PHYSICAL SCIENCE 48 Hrs.

Related science course for certificate program; lectures and demonstrations with little problem solving; assignments, mainly reading; basic topics common to all shops; selected topics for specialized shop needs.

TS 21 PHYSICS-MECHANICS 4 Cr. - 64 Hrs.

Lecture, demonstration, problem-solving course in elementary mechanics: basic concepts of scientific method; the metric system; vectors, translatory motion; rotary and uniform circular motion, work, power, energy; physical properties of liquids, solids, gases.
Prerequisites: TM 21 or equivalent and one year high school general science

TS 22 INTRODUCTION TO METALLURGY 4 Cr. - 64 Hrs.

Introduction to science of physical metallurgy; chemical composition, crystallization, effects of mechanical treatment-drawing, rolling, shaping; thermal or heat treatment.
Prerequisite: TS 21

TS 31 PHYSICS-ELECTRICITY AND MAGNETISM 4 Cr. - 64 Hrs.

Fundamental concepts of electrostatics, electrolysis; AC and DC circuits, magnetism; electromagnetic induction; basic principles of electricity.
Prerequisite: TS 21

TS 32 PHYSICS-HEAT AND LIGHT 3 Cr. - 48 Hrs.

Basic principles of heat and its measurements: thermometry, calorimetry, expansion of liquids, solids, and gases, transfer of heat; study of light including refraction, illumination, optics and color.
Prerequisite: TS 21

SHEET METAL DEPARTMENT / Career Program

GEORGE C. KRAUSE, Chairman

Certificate
SM Sheet Metal

SHEET METAL (SM)

Certificate / Two Years

You can be sure of employment and excellent pay in sheet metal work since the metal working trades employ a large percentage of the nation's work forces. In this Sheet Metal Program the fundamentals of the trade are taught, and practical laboratory work with up-to-date metal working equipment is stressed. stressed.

Types of Jobs: Employment in various phases of sheet metal work including the service trades, heating, ventilation, air-conditioning, manufacturing, construction, ship building; or self-employment.

Job Opportunities: Excellent with good starting salaries.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SM 10	Basic Sheet Metal (Hand/ Machine)	0	25	400
GM 10	Arithmetic or GM 20	3	0	48
TE 01	Communications I or TE 11	3	0	48
		6	25	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SM 20	Intermediate Processes	0	25	400
GM 20	Algebra	3	0	48
TE 02	Communicatons II or TE 21	3	0	48
		6	25	496

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SM 30	Basic Commercial Sheet Metal	0	25	400
EC 02	Economics or EC 11	3	0	48
	Physical Education 101	0	2	32
		3	27	480

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SM 40	Commercial Sheet Metal	0	25	400
GS 20	Physical Science or TS 21	3	0	48
BM 47	Small Business Management	3	0	48
		6	25	496

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *sheet metal department*

BM 47 SMALL BUSINESS MANAGEMENT

For course description, see Business Administration Department, page 105.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

GM 10 ARITHMETIC

For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA

For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE

For course description, see Science Department, page 199.

SM 10 BASIC SHEET METAL (HAND/MACHINE) 400 Hrs.

Introduction to sheet metal working tools, metals, techniques and safety regulations; instruction in related drafting and mathematics; accuracy in interpreting elementary blueprints.

SM 20 INTERMEDIATE PROCESSES 400 Hrs.

Practical pattern drafting including heating, air-conditioning and ventilation; construction principles and practice; installation of roofing and spouting; related drafting instruction. Live work from planning stage to completion.

Prerequisite: SM 11

SM 30 BASIC COMMERCIAL SHEET METAL 400 Hrs.

Basic welding procedures for light metals, use and care of equipment; techniques with costly metals; fabrication and repair of commercial equipment; ornamental sheet work; press working techniques.

SM 40 COMMERCIAL SHEET METAL 400 Hrs.

Theory and techniques of basic processes in plastics; principles, design, and fabrication of industrial and residential ventilation; care and use of precision layout tools and measuring devices; advanced theory on commercial sheet metal and practice on power-driven machinery.

TE 01 COMMUNICATIONS

For course description, see English Department, page 143.

TE 02 COMMUNICATIONS

For course description, see English Department, page 143.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

SIGN PAINTING DEPARTMENT / Career Program

WILLIAM S. BEST, Chairman

Certificate

SP Sign Painting

SIGN PAINTING (SP)

Certificate / Two Years

For the growing, important trade of sign painting, this program will give you practical experiences in lettering skills, design, layout, and type finishings of signs and showcards. Materials, equipment, and safety practices used in painting, building, and sign erection will be stressed; and you may specialize in one or two specific fields of this vocation.

Types of Jobs: Self-employment; work with sign painters, bottlers, outdoor advertisers, department stores, theaters, television stations, and truck fleets.

Job Opportunities: Unlimited and fair starting salaries with excellent chances for advancement.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SP 01	Basic Alphabets	0	25	400
TE 01	Communications I or TE 11	3	0	48
EC 02	Economics or EC 11	3	0	48
		6	25	496

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SP 02	Letter Strokes and Showcard Layout	0	32	512

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SP 03	Commercial Showcards	0	28	448
	*Electives SP 05 or SP 06	3	0	48
		3	28	496

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
SP 04	Commercial Signs	0	25	400
	*Electives SP 06, SP 07 or BM 47	3	0	48
		3	25	448

***Electives:** *Enrollment in SP 06 and SP 07 depends upon demonstrated competence in SP 01, SP 02, and to some extent SP 03 and SP 04. Instructors will certify students to enroll. BM 47 (Small Business Management) may be elected in lieu of the above.*

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *sign painting department*

BM 47 SMALL BUSINESS MANAGEMENT 48 Hrs.

For course description, see Business Administration Department, page 105.

EC 02 ECONOMICS

For course description, see Economics Department, page 128.

SP 01 BASIC ALPHABETS 400 Hrs.

Use and care of sign materials; fundamentals of alphabets; skill in making elements with brush.

SP 02 LETTER STROKES AND SHOWCARD LAYOUT 512 Hrs.

Continuation of practice in letter strokes; preparation of thumbnail sketches and show card layout.

SP 03 COMMERCIAL SHOWCARDS 448 Hrs.

Continuation of thumbnail sketches and show card layout; emphasis on quality with speed.

SP 04 COMMERCIAL SIGNS 400 Hrs.

Brush techniques in laying out and painting commercial signs, trucks, window lettering; masking; using bulletin colors and spray lacquers.

SP 05 GOLD LEAF 48 Hrs.

Preparing surfaces for all types of metallic leaf application; treatment of gold leaf on glass.

SP 06 SILK SCREEN 48 Hrs.

Executing layout problems for knife-cut silk screens; running production with oneman processor.

SP 07 BILLBOARD PICTORIALS 48 Hrs.

Enlarging pictorials; mixing paints of different medias; actual enlargement and painting.

TE 01 COMMUNICATIONS I

For course description, see English Department, page 143.

WELDING DEPARTMENT / Career Programs

BERNARD WILLIAMS, Chairman

Associate Degree

WT Welding Technology

Certificate

WE Welding

WELDING TECHNOLOGY (WT)

Associate Degree / Two Years

As a welding technician your duties will lie between the welding engineer who originates the work and those who are concerned with its completion. You will be a key figure in industry and use your technical skills to adapt theory to production. Manipulative skills are stressed in the program and laboratory experiences in electric, oxy-acetylene and inert gas welding techniques insure you trade efficiency.

Types of Jobs: Welding specialist equipment representative, technician, foreman, analyst, inspector, job shop proprietor.

Job Opportunities: Unlimited with excellent starting rates and advancement possibilities.

FIRST SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 13	Algebra	4	4	1	80
TE 11	English Composition	3	3	0	48
WT 11	Acetylene Welding-Position	7	1	18	304
WT 13	Alloy Welding and Brazing	1	0	3	48
	Physical Education 101	1	0	2	32
		16	8	24	512

SECOND SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TM 21	Trigonometry	4	4	1	80
TE 21	Speech	3	3	0	48
WT 20	Electric Welding	8	1	21	352
	Physical Education 102	1	0	2	32
		16	8	24	512

THIRD SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
TS 21	Physics-Mechanics	4	4	0	64
EC 11	Economics	3	3	0	48
WT 34	Electric Welding (Advanced)	3	1	6	112
WT 35	Inert Gas Welding (TIG)	3	1	6	112
ED 05	Blueprint Reading	3	0	3	48
WT 37	Physical Testing of Welds	1	0	3	48
WT 43	Advanced Acetylene Welding	1	0	3	48
		18	9	21	480

FOURTH SEMESTER

	Course	Cr.	Hrs. Lect.	Week Lab.	Total Sem.
WT 45	Inert Gas Welding (MIG)	4	0	2	192
TS 31	Physics-Electricity & Magnetism	4	4	0	64
TS 22	Introduction to Metallurgy	4	4	0	64
WT 44	Code Welding	3	1	6	112
WT 47	Physical Testing of Welds	1	0	3	48
		16	9	11	480

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Required high school subjects: Algebra and geometry; one year of science.

WELDING (WE)

Certificate / Two Years

Through emphasis placed on the manipulative and theoretical skills in the Welding Certificate Program, you will become a competent craftsman. You will spend much time with laboratory assignments and gain proficiency through course stress on electric, oxy-acetylene and inert gas shielded methods of welding.

Types of Jobs: Welder, welder operator, fitter, specialist, foreman, supervisor and inspector

Job Opportunities: Unlimited with good starting rates and advancement potential.

FIRST SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
WE 11	Acetylene Welding	0	26	416
TE 01	Communications I or TE 11	3	0	48
GM 10	Arithmetic or GM 20	3	0	48
		6	26	512

SECOND SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
WE 12	Electric Welding	0	22	352
TE 02	Communications II or TE 21	3	0	48
GM 20	Algebra or GM 30	3	0	48
ED 05	Blueprint Reading	3	0	48
		9	22	496

THIRD SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
WE 13	Inert Gas Welding	0	26	416
GM 30	Geometry-Trigonometry	3	0	48
	Physical Education 101	0	2	32
		3	28	496

FOURTH SEMESTER

	Course	Hrs. Lect.	Week Lab.	Total Sem.
WE 14	Advanced Welding	0	26	416
EC 02	Economics or EC 11	3	0	48
GS 20	Physical Science or TS 21	3	0	48
		6	26	512

Qualified Applied Arts and Science students may take their academic courses in the School of Liberal Arts and Sciences for transfer credit.

Recommended high school subjects: Two years of mathematics; one year of science.

COURSE DESCRIPTIONS / *welding department*

EC 02 ECONOMICS
For course description, see Economics Department, page 128.

EC 11 ECONOMICS
For course description, see Economics Department, page 128.

ED 05 BLUEPRINT READING
For course description, see Drafting Department, page 124.

GM 10 ARITHMETIC
For course description, see Mathematics Department, page 177.

GM 20 ALGEBRA
For course description, see Mathematics Department, page 177.

GM 30 GEOMETRY-TRIGONOMETRY
For course description, see Mathematics Department, page 177.

GS 20 PHYSICAL SCIENCE
For course description, see Science Department, page 199.

TE 01 COMMUNICATIONS I
For course description, see English Department, page 143.

TE 02 COMMUNICATIONS II
For course description, see English Department, page 143.

TE 11 ENGLISH COMPOSITION
For course description, see English Department, page 143.

TE 21 SPEECH
For course description, see English Department, page 143.

TM 13 ALGEBRA
For course description, see Mathematics Department, page 178.

TM 21 TRIGONOMETRY
For course description, see Mathematics Department, page 178.

TS 21 PHYSICS-MECHANICS
For course description, see Science Department, page 199.

TS 22 INTRODUCTION TO METALLURGY

For course description, see Science Department, page 199.

TS 31 PHYSICS-ELECTRICITY & MAGNETISM

For course description, see Science Department, page 199.

WE 01 ACETYLENE WELDING 2 Cr. - 80 Hrs.

Selected units in basic acetylene welding for plumbing students.

WE 02 ELECTRIC WELDING 2 Cr. - 80 Hrs.

Selected units in basic electric welding for plumbing students.

WE 03 ACETYLENE WELDING 1 Cr. - 48 Hrs.

Basic units of acetylene welding for auto and diesel students.

WE 04 ELECTRIC WELDING 1 Cr. - 48 Hrs.

Basic units of arc welding for auto and diesel students.

WE 11 ACETYLENE WELDING 416 Hrs.

Welding of sheet metal and mild steel plate; oxy-acetylene cutting; pipe welding; welding and brazing of ferrous and non-ferrous metals; weld testing; shop safety.

WE 12 ELECTRIC WELDING 352 Hrs.

Basic electric welding course using various types of electrodes for welding of steel plate in all positions; pipe welding; cast iron welding; weld testing.

WE 13 INERT GAS WELDING 416 Hrs.

Use of manual inert gas shield technique (TIG) and short arc, high speed, semi-automatic, metallic arc process (MIG).

WE 14 WELDING (ADVANCED) 416 Hrs.

Course primarily for weldments to specifications of AWS, API and ASME codes; all position welding of heavy plate and pipe; testing of weld specimens.

WT 11 ACETYLENE WELDING-POSITION 7 Cr. - 304 Hrs.

Elementary acetylene welding: flame characteristics; metal identification; joint preparation; forehand and backhand welding of plate sheet metal and pipe in all positions; inspection; freehand straight line cutting, beveling; machine cutting, safety.

WT 13 ALLOY WELDING AND BRAZING 1 Cr. - 48 Hrs.

Advanced acetylene welding; welding, brazing of aluminum plate and sheets in flat, vertical positions; preparation and repair of aluminum castings and parts; white metal welding; brazing and welding of copper alloys; stainless steel welding; silver soldering and cast iron specimens.
Prerequisite: WE 11

WT 20 ELECTRIC WELDING 8 Cr. - 352 Hrs.

Basic electric welding; shop safety; welding general types of joints with different types and sizes of electrodes, all positions.

WT 34 ELECTRIC WELDING (ADVANCED) 3 Cr. - 112 Hrs.

Difficult portions of welding: butt, flange, tee, lateral and "Y" joints; stainless steel in the flat and vertical positions; aluminum welding; dissimilar metals and sheet metal; acetylene cutting.
Prerequisite: WT 20

WT 35 INERT GAS WELDING (TIG) 3 Cr. - 112 Hrs.

Manual welding of steel, stainless steel, aluminum and copper alloys in flat, vertical and overhead positions.
Prerequisite: WT 34

WT 37 PHYSICAL TESTING OF WELDS 1 Cr. - 48 Hrs.

Competent inspection and adequate testing; types of testing: free bend, root, face, tensile and nick break; close inspection made of each weld specimen.

WT 43 ACETYLENE WELDING (ADVANCED) 1 Cr. - 48 Hrs.

All welded joints of SAE 4130 tubing, sheet metal and aluminum; correspond to joint design of aircraft industry.
Prerequisite: WT 11

WT 44 CODE WELDING 3 Cr. - 112 Hrs.

Welding to specifications and procedures recommended by American Welding Society; procedures covered: ASME, section VIII, unfired pressure vessels, AWS specifications for welded highway and railway bridges.
Prerequisite: WT 34

WT 45 INERT GAS WELDING (MIG) 4 Cr. - 192 Hrs.

Steel plate, pipe, aluminum and stainless steel welded in flat, vertical and overhead positions.
Prerequisite: WT 34

WT 47 PHYSICAL TESTING OF WELDS 1 Cr. - 48 Hrs.

Principal methods of testing and inspection used to determine soundness, quality and efficiency of welded joint or weldment; competent inspection and adequate tests prescribed by governing standards or codes.

RELATED COURSES (COLLEGE TRANSFER) SCHOOL OF LIBERAL ARTS AND SCIENCES

PHYSICAL EDUCATION 101 AND 102 2 Cr. - 64 Hrs.

For course descriptions, see Physical Education Department, pages 49 and 50.

SCHOOL OF CONTINUING EDUCATION

Evening and Summer Sessions offering courses from the Schools of Liberal Arts and Sciences and Applied Arts and Sciences and special programs, seminars, and workshops.

FOR YOU IF YOU PLAN TO TAKE COURSES –

To meet specific job requirements.
To facilitate job advancement.
To promote self-development.
To make up academic deficiencies.
To earn credit toward an Associate Degree.

TO BE ADMITTED –

For part-time enrollment - (non-degree courses).
There are no prerequisites or requirements.

For part-time enrollment - (degree objective).

Acceptance in one of the degree programs at the College is restricted to applicants who can meet the regular admission requirements for specific programs in the School of Applied Arts and Sciences or the School of Liberal Arts and Sciences of the College. Students may apply for degree candidacy upon the successful completion of six credit hours of work.
Exception: Industrial Technology - 15 hours.

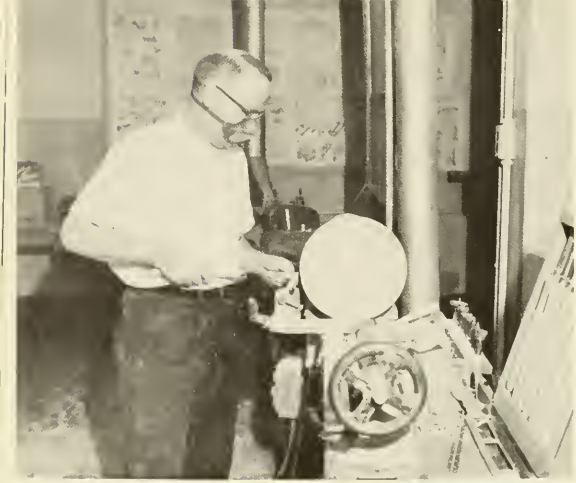
WILLIAM HOMISAK, Dean of the School of Continuing Education, counsels "young people of all ages" about educational opportunities to meet their specific needs.

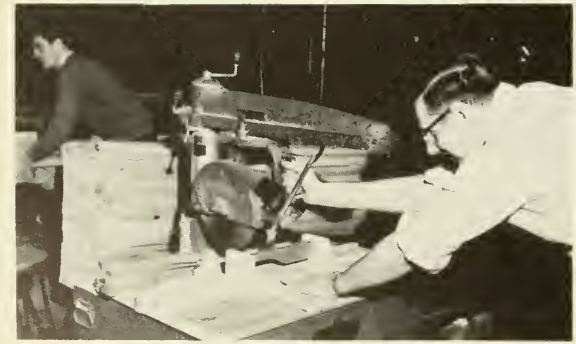
DEAN HOMISAK INTRODUCES YOU TO THE SCHOOL OF CONTINUING EDUCATION

THE PURPOSE

The general objective of the Continuing Education program is to provide educational opportunities and community services for all adults and to encourage participation by adults in various programs of study and self-development, which will assist them in carrying on more effectively their civic, social, and economic responsibilities. Its operation is based upon the belief that ample and varied opportunities for training, exploration of new interests, acquiring new information, and developing new skills will help build a more enlightened and better community.

As a community institution, the evening sessions seek to serve the area through a traditional liberal arts program as well as technical-vocational offerings. Responding to a growing demand, college transfer courses are included in the evening session curriculum. A student is now able to earn the Associate of Arts or the Associate of Science degree in the evening program.





THE SCHOOL OF CONTINUING EDUCATION

The desire of people of all ages to better understand themselves and the world they live in, and to receive general and specialized education, keeps the lights at The Williamsport Area Community College burning late into the night.

These are the lights of the School of Continuing Education, a vital and integral part of the College's "extended" day program.

The School of Continuing Education offers educational opportunities to many different people. . .

. . . to the person who must work in the day and desires to earn college credits in the evening.

. . . to the technician desiring to keep pace with today's rapid technological advances.

. . . to the person who wishes to improve his vocational skills.

. . . to housewives preparing for "second careers".

. . . to husbands and wives seeking do-it-yourself skills.

. . . to senior citizens with retirement problems.

. . . and, to the entire community - special training programs for business, industrial, professional, and community organizations.

SCHOOL OF CONTINUING EDUCATION / Courses

EVENING SESSION

Courses offered in the **Fall Semester - 1968 Bulletin** are listed below and on the following page. Additions and deletions of the courses listed will take place each semester. New courses will be added to meet new demands. **Check with the Office of Continuing Education prior to registration for each semester to obtain a revised list of evening session and summer session course offerings.**

SUMMER SESSION

Credit courses are given in many subjects during the summer. The summer session is organized mainly to meet the needs of college students and other high school graduates who wish or require additional course work before returning to or entering college. Some non-credit offerings are also given. Classes meet daily for eight weeks and may be scheduled during the day or evening hours.

LIBERAL ARTS AND SCIENCES

Course	*Credits*
Biology 101 - General	4
Biology 201 - Microbiology	4
Business Administration 201 - Accounting	3
Business Administration 250 - Business Law	3
Chemistry 101 - General	4
Chemistry 103 - Adv. General	4
Chemistry 201 - Quant. Analysis	4
Economics 201 - Introduction	3
Economics 203 - International	3
Economics 205 - Personnel Relations	3
Education 201 - Introduction	3
Engineering 250 - (Math. & Engr.) - Computer Sci.	3
English 100 - Basic	0
English 101 - Composition	3
English 102 - Composition	3
English 105 - Short Story Writing	3
English 201 - History of Literature	3
English 202 - History of Literature	3
French 101 - Beginning	4
French 201 - Intermediate	3
Geography 101 - Physical	3
Geology 101 - Elements	3
German 101 - Beginning	4
German 201 - Intermediate	3
Government 201 - American Nat.	3
Government 205 - Comparative	3
History 101 - World	3
History 201 - U. S. & Pennsylvania	3
History 212 - 20th Century	3
Mathematics 100 - Fundamentals I	3
Mathematics 101 - College Algebra	3
Mathematics 105 - Calculus I	4
Mathematics 200 - Fundamentals II	3
Mathematics 205 - Calculus III	4
Mathematics 220 - Matrix Algebra	3
Mathematics 230 - Probability	3
Philosophy 101 - Introductory	3
Philosophy 201 - Logic	3
Physics 105 - General	4
Psychology 101 - General	3
Psychology 205 - Abnormal	3
Sociology 101 - Introductory	3
Spanish 101 - Beginning	4
Spanish 201 - Intermediate	3
Spanish 211 - Conversation & Comp.	3
Speech 211	3
Speech 212 - Debating	2
Physical Education 101	1
Physical Education 103	1

APPLIED ARTS AND SCIENCES

LIBRARY ASSISTANT

Course		Credits
LS 10	Introduction to Libraries and Books	3
LS 11	Internship I	3
LS 15	Technical Services I	3

BUSINESS

Course		Credits	Day
BM05-C	Salesmanship Seminar	1	Tues.
BM01-C	Business Machines	1	Thurs.
BE01-C	Business English	1	Tues.
BA01-C	Accounting - Introduction	1	Mon.
BA02-C	Accounting - Intermed. (Part. & Corp.)	1	Wed.
BS01-C	Shorthand I	1	Wed.
BS03-C	Shorthand II	1	Mon.
BT01-C	Typewriting I	1	Mon.
BT02-C	Typewriting II	1	Wed.
EC 12-C	Real Estate	3	Tues.
DK01-C	Keypunching	1	Thurs.
DP01-C	Introduction to Data Processing	2	Mon.
DP01-C	Introduction to Data Processing	2	Tues.
DP02-C	Technical Computer Programming - Fortran	2	Thurs.
DP03-C	Business Computer Programming - Autocoder	2	Mon.
DP05-C	Business Computer Programming - Cobol	2	Wed.

GENERAL

Course		Credits	Day
JO19	Reading and Comprehension	2	Mon.
GC01-C	Painting	1	Wed.
GC06-C	Applied Design (Horne Art)	1	Tues.
GC08-C	Sculpture	1	Mon.
GC05-C	Pottery and Ceramics	1	Tues.
GC07-C	Graphics (Print Making)	1	Wed.
GW01-C	Avocational Woodworking	1	Tues.
GW02-C	Beginning Woodworking	1	Mon.

ARCHITECTURE

Structures, Graphics, History, Statics, Material and Methods, Building Equipment, Design Site Planning, Seminar, Prof. Administration. (These courses are scheduled during late afternoon and evening hours.)

CIVIL TECHNOLOGY

Course		Credits
CT 31	Eng. Tech. - Inc. Highway Eng.	4
CT 32	Statics and Strength of Materials	4

HOMEMAKING

Course		Credits	Day
HS01-C	Beginning Sewing	1	Mon.
HS01-C	Beginning Sewing	1	Tues.
HS03-C	Advanced Clothing Construction	1	Mon.
HS04-C	Tailoring	1	Wed.

INDUSTRIAL TECHNOLOGY (Associate Degree Program)

Course		Credits	Day
IM10-C	Introduction to Mathematics	3	Mon.
TM11-C	Algebra	3	Mon.
TM12-C	Trigonometry	3	Mon.
TE11-C	English - Composition	3	Tues.
TE21-C	English - Oral	3	Tues.
IT13-C	Blueprint Reading & Sketching	2	Wed.
TM14-C	Math Calculations - Slide Rule	2	Wed.

The Industrial Technology program is intended for people who are presently employed in business and industry and wish to apply these courses toward an Associate Degree in Applied Arts & Sciences. These students may carry six credits per semester with the possibility of completing the degree requirements within five years.

FOOD SERVICE TECHNOLOGY

Course		Credits
FS 01	Orientation	1
FS 02	Foods I	3
FS 03	Nutrition I	3
CH 01	Chemistry I	4
PN 24	Human Physiology	3

These course are scheduled in the late afternoon and evening hours.

HEALTH OCCUPATIONS

Course		Credits	Day
HO01-C	Practical Nursing - Unit 1 (L.P.N. by waiver only)	2	Thurs.
HO04-C	Practical Nursing - Unit 2, Part 3 (L.P.N. by waiver only)	2	Thurs.
HO05-C	Practical Nursing - Unit 2, Part 4 (L.P.N. by waiver only)	2	Thurs.

TECHNICAL AND TRADE

Course		Credits	Day
AV02-C	Aviation Ground School Seminar	1	Mon.
AM01-C	Small Gasoline Engines	1	Tues.
AM02-C	Auto Tune-up and Maintenance	1	Mon.
AM03-C	Auto Test Equipment	1	Mon.
AM04-C	Motor Vehicle Service Maintenance	1	Tues.
CA02-C	Carpentry and Woodworking	1	Tues.
EW02-C	Electrical Fundamentals	1	Wed.
EW05-C	Electrical Fund. - Indust. & Const.	2	Thurs.
ET01-C	Electronics A - Basic	1	Wed.
ET03-C	Electronics C - Basic	1	Wed.
GA07-C	Composing and Copy Preparation	2	Tues.
GA08-C	Photomechanical Repro. & Stripping	2	Wed.
GA09-C	Press Operation and Bindery Methods	2	Thurs.
MS01-C	Machine Shop	1	Mon.
MS03-C	Precision Measurement & Inspection	1	Tues.
TQ01-C	Quality Control - Sect. I	1	Wed.
TQ02-C	Quality Control - Design of Exper. Sect. II	1	Wed.
DC06-C	Tech. Drawing (Drafting, Tech. Illus. & Eng. Drafting)	1	Wed.
DC07-C	Cost Estimating	1	Thurs.
SM01-C	Sheet Metal - Pattern Drafting	1	Thurs.

GRANT M. BERRY, Dean of Student Services

DEAN BERRY EXPLAINS STUDENT SERVICES

From the time you apply for admission to the College, and throughout your college career, you will benefit from the professional assistance available in Student Services.

These services include admissions, registration, placement testing, advisement, vocational diagnostic clinic, orientation, financial aid, student activities, college transfer, and job placement — and help from a staff trained to aid you in solving problems that may confront you in college or in contemporary society.

The College offices within Student Services are:

Dean of Student Services
Admissions
Registrar
Counseling and Guidance
Vocational Diagnostic Clinic
Financial Aid
Student Activities and Affairs
Health Services
College Transfer and Job Placement

The responsibilities of each of these offices in meeting your needs will be indicated in this section.

ADMISSIONS

ADMISSION REQUIREMENTS

	Page
School of Liberal Arts and Sciences . . .	19
School of Applied Arts and Sciences . .	57
School of Continuing Education	213

From our standpoint, one admissable student is as qualified as another. Quality is too often over simplified as meaning high aptitude as indicated by credentials upon entrance. Our degree and certificate programs have been designed to meet a variety of needs and desires. All we expect is that you learn as much as you reasonably can in view of your individual capacity.

Subscribing to the belief that anyone who seeks more education should find it, hoping to prevent rather than support unemployable citizens in our society, the College has publicized loudly its open-door policy. Our invitation has been accepted. Applicants for admission in our full-time programs have ranged in age from seventeen to "over thirty." Many of them have exceptional ability and a keen desire for learning. However, high school and college dropouts have also re-entered school. Married students, over ten percent of our full-time students, have discovered with us opportunities to meet their present responsibilities and still anticipate brighter futures.

We are proud to say that we are able to offer to nearly every applicant admission into a program in which he has a reasonable chance for success. We are able to do this not only because of our wide variety of educational programs, but also because of our guidance and counseling services. We provide professional advice to help you select a program suited to your aptitudes, abilities, and needs. In addition, our College Skills Program for the development of language, mathematics, and science skills will help prepare you for college level programs to make possible the achievement of your educational goals.

GENERAL ADMISSIONS POLICY

The admissions policy at The Williamsport Area Community College is a liberal one, designed to extend an educational opportunity to all who show potential for achievement. Your admission to the College is contingent upon meeting the requirements of the particular program or field of study you desire.

ORDER OF PREFERENCE FOR ADMISSION

Preference will be given:

First, to applicants from sponsor districts;

Second, to applicants from districts sponsoring other community colleges;

Third, to applicants from Pennsylvania school districts not sponsoring community colleges;

Fourth, to out-of-state applicants.

ADMISSION PROCEDURE AND INFORMATION

Application forms may be obtained from the Admissions Office, The Williamsport Area Community College, 1005 West Third Street, Williamsport, Pennsylvania 17701. The telephone number is (717) 326-3761 extension 237.

An application should be submitted as early as possible in the year in which you expect to enroll but not more than one year in advance of that date. Preference will be given to applications received before March 1.

An interview is not required prior to submission of an application. However, if you need additional information or aid in selecting a course or program, you may arrange for a personal interview by writing or calling the Admissions Office at the address listed in the preceding paragraph. Requests for personal interviews should be made at least three weeks in advance of the date the interview is desired.

TRANSFER STUDENT

If you seek to transfer to The Williamsport Area Community College you must submit an official transcript of the course work completed at any other college or colleges.

Courses for which transfer credit is sought will be evaluated by the College. A maximum of 30 credit hours may be transferred toward completing an Associate degree. If you plan to graduate from The Williamsport Area Community College, the last semester must be completed at the College.

If after completing four semesters, you lack some credits required for a degree, you may, with approval of the dean, be permitted to take up to six semester credit hours from another college to fulfill requirements for the Associate degree from The Williamsport Area Community College. Only grades of C or better are acceptable for such credit transfer.

TRANSFER OF CREDIT

Credits earned in the College Transfer Programs of the Williamsport Area Community College may be transferred to the four-year institution of your choice provided you meet the requirements of the receiving college or university. It is for this reason that you should confer, either by letter or personal interview, with the admissions officer at the four-year institution for detailed information about curriculum and transfer regulations at that school.

The responsibility to determine whether you will meet the admission requirements of the college to which you intend to transfer rests with you.

Visits by admissions representatives of other colleges will be made during the course of the college year. Information concerning these visits will be posted in the office of the Placement Officer. Students planning to transfer should consult with these representatives as they visit the College campus.

A grade-point average of 2.50 will be required for transfer recommendation to another college.

COUNSELING AND GUIDANCE

One role of the community college is to assist you in making the often difficult transition from high school to the more rigorous demands of college study. The College maintains a full-time guidance staff for this purpose. This staff will counsel and guide you according to your respective aptitudes, abilities, and interests before and after you enroll.

Admissions counseling is provided to assist you to understand the various types of programs available in the College and to clarify matters which pertain to qualifications and prerequisites.

Vocational counseling is provided to help you if you wish additional assistance in regard to the actual selection of a vocational objective or field of study.

Academic counseling is provided by a faculty advisor who will be designated to help you prepare class schedules and plan your academic program to meet your college transfer and career goals.

Personal counseling is provided based on your individual needs beyond the scope of admissions, vocational, or academic counseling.

VOCATIONAL DIAGNOSTIC PROGRAM

If you require intensive vocational counseling you may take advantage of the three-week Vocational Diagnostic Program offered approximately ten times during the school year. This program is designed to assist you in career selection through aptitude testing, individual counseling, extensive vocational information and actual job trials in the various departments.

This service is available to you whether or not you plan to attend the College. For fees and additional information write:

Vocational Diagnostic Department
The Williamsport Area Community College
or phone Williamsport (717) 326-3761 extension 241

REGISTRATION

You must register in person on the dates specified in the the College Calendar. If your registration is not completed, including payment of all required fees, during the days specified as registration days, you will be charged a late registration fee of $10.00.

SPONSOR SCHOOL DISTRICTS

Bradford County

Canton Area
Troy Area

Clinton County

Beech Creek Borough
Castanea Township
Dunstable Township
Flemington Borough
Gallagher Township
Lock Haven Area
Pine Creek No. 2
Woodward Township

Lycoming County

East Lycoming District
Jersey Shore Area
Montoursville Area
Williamsport Area

Northumberland County

Warrior Run

Snyder County

Center Township
Chapman Township
Franklin Township
Freeburg Borough
Selingsgrove Borough
Union Township
Washington Township

Sullivan County

Sullivan County Area

Tioga County

Wellsboro Area
Southern Tioga

Union County

Mifflinburg Area

If your school district is listed above —
. Your tuition per semester will be $155.00
. Your tuition per part-time (credit hour) will be $ 13.00

If your school district is not listed above —
check to find out if it has become a sponsor since this catalog was issued.

Sponsor School Board Members *meet with College administrators to plan educational opportunities for area citizens.*

TUITION AND FEES

REGISTRATION FEE $10.00

A non-refundable registration fee (required to be paid only once) must accompany your application.

TUITION DEPOSIT $25.00

A $25.00 deposit on the first semester's tuition is required for all full-time students within the time period specified in the notice of registration date. If your tuition deposit is not received within the time stipulated, the College may assign your place to another applicant.

TUITION AND FEES

The tuition and fees for a 16 week semester are as follows:

	Resident of Sponsor District	Resident of Non-sponsor District	Out-of-State Resident
Tuition	$ 155.00	$ 310.00	$ 465.00
Service Fee	None	50.00	100.00
Activity Fee	7.00	7.00	7.00
	$ 162.00	$ 367.00	$ 572.00

If you are a resident of a sponsor district of The Williamsport Area Community College, after being notified that you have been accepted, you must have the secretary of your local school board complete a resident tuition form in order to be eligible for sponsor district tuition rates. This form should be mailed to the Business Office of the College as soon as possible prior to registration.

If you are a resident of a district which is a sponsor of some other community college, you must obtain permission from the board of trustees of that particular college at least 60 days prior to date of enrollment in order to qualify for sponsor district tuition. If this permission is not obtained in writing, it will be necessary for you to pay the same tuition as out-of-state residents. If permission is obtained, tuition and fees will be:

Tuition	$ 155.00
Service Fee	50.00
Activity Fee	7.00
Total	$ 212.00

The tuition and fees in the School of Continuing Education are as follows:

	Per credit hour
Resident of Sponsor District	$ 13.00
Resident of Non-sponsor District	30.25

Charges are subject to change at any time without prior notification.

WITHDRAWALS AND REFUNDS

Charges for tuition are refundable upon withdrawal from the College only if you obtain an official withdrawal form from the dean of your School and present it to the Business Office.

Refunds of tuition will be made according to the following schedule:

1st week of classes	80% Refund
2nd week of classes	70% Refund
3rd week of classes	60% Refund

No refunds will be made after the third week of classes. Registration, activity, and service fees are not refundable.

HOUSING

The cost per student for accommodations in a double room at the Lycoming Hotel dormitory for women is $271.10 per semester. The College does not provide housing facilities for men. As a service to those who may have need for housing, however, the Student Affairs Office maintains a listing of rooms and apartments submitted by prospective landlords. A survey of the facilities listed by the College indicates the average cost of room and board for a sixteen week semester is $443.00.

BOOKS, TOOLS, AND SPECIAL CLOTHING

You must purchase all textbooks. Since it is the policy of the College to keep your expenses as low as possible, a College bookstore is operated on a low-cost basis.

All special and large tools will be supplied by the College. A list of required tools will be furnished by the instructors. Only personal tools required in the respective shops and laboratories must be purchased by you. You are required to wear special protective clothing for some shops and laboratories. These articles may be purchased at the College bookstore on the same low-cost basis.

Lycoming Hotel Facilities

Popular Rooming House for Men

FINANCIAL AID

WHO SAYS YOU CAN'T AFFORD IT?

Of course it costs money to attend The Williamsport Area Community College . . . or any other institution of higher learning for that matter. But each semester, thousands of students are finding they can afford it.

What's more, WACC graduates are saying their decision to attend college is the wisest one they've ever made. The time . . . effort . . . and money . . . are wise investments in a lifelong career.

On the following pages you will find a description of the financial assistance programs available to you. The purpose of these programs is to make college a reality for an interested and qualified person like you.

Don't say you can't afford it. You can't afford not to!

HOW MUCH WILL YOU NEED?

The following table of expenses has been compiled from the actual experience of The Williamsport Area Community College students. It assumes that the student lives in a sponsor district, is taking a full-time course load each semester and is living at home but is paying about $40.00 per month for board and room.

ESTIMATED EXPENSES FOR THE ACADEMIC YEAR

Tuition	$ 310.00
Books and Supplies	75.00
Board and Room (nine months)	360.00
Travel (bus or gasoline)	80.00
Clothing	100.00
Personal	200.00
	$ 1125.00

Remember, these are average figures and will vary from student to student. Students from Pennsylvania non-sponsor school districts should plan to pay $412.00 more in tuition and fees. Students from out-of-state should plan to pay $820.00 more in tuition fees. Students who do not live at home will have higher board and room costs.

WHAT FINANCIAL HELP IS AVAILABLE?

The Williamsport Area Community College's Financial Aid program operates in the following areas:

Scholarships
Loans
Educational Assistance for Veterans
Social Security Educational Assistance
Vocational Rehabilitation Assistance
Part-Time Employment

SCHOLARSHIPS

PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY SCHOLARSHIP

The Pennsylvania Higher Education Assistance Agency awards scholarships to students based upon academic achievement and financial need. There are three main types of scholarship awards as follows:

Group I Academic Scholarships. High school seniors entering two-year Associate Degree College Transfer Programs at The Williamsport Area Community College must compete in the Scholastic Aptitude Test of the College Entrance Examinations Board for these scholarships. Selection of students to receive Group I awards will be made following receipt of the applications and will be based upon test score, rank in high school class, available state funds and need for financial assistance as determined by the Pennsylvania Higher Education Assistance Agency.

Group II A Academic Scholarships. This is a freshman financial need scholarship. Awards are designed to help needy students attending approved four-year degree granting institutions. This includes those students entering community colleges or junior colleges in the Liberal Arts Programs.

These awards are made on the basis of the student's need for financial assistance, an SAT total score of 800 or higher, and his ability to successfully complete the course of study for which he is enrolled.

Group II B Academic Scholarships. Students who are enrolled or plan to enroll in an approved course of study in any trade, technical, or business school within the Commonwealth of Pennsylvania may apply for a scholarship in Group II when they have been accepted for enrollment, but not prior to high school graduation.

The course of study must be a two-year course in the Applied Science field, in either the Associate Degree or the Certificate Program, after which a student receives a degree or a certificate.

Group III Academic Scholarships. Special Freshmen and Upper Class Scholarships. Students enrolled in the sophomore year or students who enter the freshman class with a lapse of at least one year between high school graduation and college enrollment within the Commonwealth of Pennsylvania may be considered for a Group III award. The Financial aid officer at The Williamsport Area Com-

munity College will recommend students to the Pennsylvania Higher Education Assistance Agency for these awards on the basis of financial need and availability of Group III funds. These awards may be renewed from the freshman to the sophomore year upon the recommendation of the College.

Applications for Group II and Group III scholarships may be obtained from high schools, the College Financial Aid Office, or the Pennsylvania Higher Education Assistance Agency in Harrisburg.

SYLVANIA ELECTRIC PRODUCTS, INC. SCHOLARSHIPS FOR YORK COUNTY RESIDENTS

The Sylvania Electric Products of York, Pennsylvania, has established two $1,000 Scholarships to be awarded to graduating seniors from any of the York County High Schools who are interested in obtaining additional education in machine trades subjects. Scholarship applications may be secured at the guidance office of any York County high school.

LOANS

PENNSYLVANIA HIGHER EDUCATION ASSISTANCE AGENCY-FEDERAL GUARANTY LOAN PROGRAM

The Pennsylvania Higher Education Assistance Agency administers the Federal Guaranty Loan Program. This program enables residents of Pennsylvania to borrow up to $1,000 per academic year from approved lending institutions in Pennsylvania to meet educational expenses. The student pays no interest on the loan until after graduation or withdrawal from the college, after which he must pay three percent interest during the repayment period.

After the student graduates from high school, he should contact a local participating lending institution to initiate an application for a loan.

THE G. WALTER SMITH, JR. LOAN FUND

This loan fund was established in the memory of G. Walter Smith, Jr. Students who have attended the College for at least two semesters may apply for loans from this fund. Information and applications may be obtained from the financial aid officer at the school.

EDUCATIONAL ASSISTANCE FOR VETERANS

The Williamsport Area Community College is an accredited college for the education of veterans as authorized by Public Laws 643,815,894, and 358.

A veteran who has served continuously on active duty for a period of at least 181 days, any part of which was after January 31, 1955, and who was discharged or released under conditions other than dishonorable, or any veteran who has served less than 181 days may be eligible if he was discharged or released because of service-connected disability.

Veterans may apply to the Veterans Administration Office for education or training under this program. Additional information may be obtained by writing to the Veterans Administration Office in Philadelphia, Pennsylvania. Applications are available at the Director of Admissions Office.

SOCIAL SECURITY EDUCATIONAL ASSISTANCE

The social security law provides monthly benefits to children when a parent on whom they were dependent dies or starts receiving social security retirement or disability benefits. The payments can be made until age 22, without regard to disability, provided the child is a full-time student in an educational institution.

VOCATIONAL REHABILITATION ASSISTANCE

Financial assistance in varying proportions is available through the Office of Vocational Rehabilitation for applicants who may be under a disability. For further information concerning this program inquiries should be directed to the Office of Vocational Rehabilitation at the College.

WORK-STUDY PROGRAM

A Health, Education and Welfare Department program that provides part-time employment for qualified students. Under this program, students who have financial need may work at college-oriented jobs. When classes are in session, students are limited to 15 hours per week with hourly rates ranging from $1.25 to $1.75 per hour depending on the work project. A list of such part-time jobs is available in the Student Affairs Office.

PART-TIME EMPLOYMENT

While no promises can be made as to part-time employment because of changing times and conditions, there are part-time jobs available from time to time. A list of such part-time jobs is maintained in the Placement Office.

William R. Anderson, armless WACC graduate, was hailed as an 'inspiration' when he received the "Handicapped State Employee of the Year" award. He is a sign painter in the Lehigh County maintenance department in Allentown. In this photograph he shows Governor Shafer how he paints highway markers.

WILLIAMSPORT
AREA
COMMUNITY
COLLEGE

STUDENT LIFE IS EXCITING AND REWARDING!

ORIENTATION PROGRAM

During the first semester all freshmen are required to participate in an orientation program which includes a tour of the campus and a series of lectures and discussions on campus activities.

STUDENT AFFAIRS

The majority of our students tell us they enjoy being students here. Those concerned with making them happy are largely preoccupied with encouraging their involvement in student activities. They try to guide them to a comprehension of Andre Gide's wise observation, "that man's happiness lies not in freedom, but in his acceptance of a duty".

STUDENT GOVERNMENT

The Student Government has continued to improve the general welfare of the entire student body. Its major areas of concern were a new constitution, more effective campus communication, increased student participation in extra-curricular activities, and involvement in long-range plans for a new Student Union Building.

New on the student government scene, a learning-ground for leadership, is a Women's Student Organization. This group has jurisdiction over many rules of dormitory life, sponsors a varied program designed to reflect the interests of women students, and acts as a sounding board for their views.

CLUBS

New student clubs and organizations have been formed:

1. Special departmental groups which include those who have a common interest or educational purpose
2. Honorary groups where membership is earned as an award for achievement
3. Service groups which exist to serve the College or community

Now active on campus are:

Architectural Club
Phi Beta Lambda (Business)
Circle K Club
Drama Club
Gamma Epsilon Tau (Printing)
Computer Science Club
International Relations Club
Mechanical Engineering Club
Outing Club
Glee Club
Women's Student Organization
Bowling Club

The Student Services Staff *is responsible for innovative programs which help make student life exciting and rewarding!*

Student Government Officers *and advisors meet with the President and the Dean to discuss student needs.*

SOCIAL EVENTS

The Student Council sponsors a series of dances, Fall and Spring Weekends, and many other social events during the school year.

ATHLETICS

The College subscribes to the belief that well-balanced intramural and intercollegiate sports programs play an important role in the overall purpose of an educational institution and sponsors these activities as an integral part of its educational program.

INTRAMURALS

Intramurals provide an opportunity for you to participate in active competition, to improve your physical strength and skill, to pursue beneficial leisure time activities, and to develop friendships. The Physical Education Department conducts a wide variety of intramural athletic leagues for men and women. These activities include touch football, soccer, basketball, volleyball, bowling, table tennis, wrestling, tennis, golf, track and field, softball, handball, horseshoes, and others.

INTERCOLLEGIATE SPORTS

The Intercollegiate Sports Program at the College is under the direction of the Physical Education Department. At present, the College has a basketball team which is a member of the National Junior College Athletic Association and a wrestling team, a member of the same association.

COLLEGE COLORS AND NICKNAME

The colors of the College are gold and burgundy and the athletic teams are nicknamed the Wildcats. Both the College colors and the nickname were selected by popular vote of the students.

CHEERLEADING

Cheerleaders represent the student body at all athletic contests. This activity is under the direction and supervision of Mrs. Gloria Corson. Announcements for tryouts are held each Fall and any student may try out for the squad. Members are selected on the basis of skill, personality, poise, and enthusiasm.

SPECIAL EVENTS

Madame Chennault *charmed administrators, students . . . and the photographer*

The cultural environment of the College and indeed of the entire community is enhanced by a balanced program of concerts, lectures and films. Outstanding among past presentations was the Pennsylvania Ballet. Other events included the Giles and Archer folk music duet, an organ recital by John Rodland, the Lehigh Poetry Quartet, a reading by George Starbuck of his own poems, lectures by Marquis Childs, Rabbi David Schwartz, Simeon Booker, and Madame Chennault. The College cooperated with the Community Arts Festival by sponsoring the Bucknell Symphony Orchestra and the Lock Haven Music Club Oratorio Choir.

e Pennsylvania Ballet Company *thrilled the audience with an exciting performance*

es and Archer *provided fine folk music for an enthusiastic audience*

Marquis W. Childs, *nationally syndicated Washington columnist*

Simeon Booker, *noted journalist, visited with students and faculty members*

The College welcomes the active partnership of your parents. As a feature of its orientation program, which seeks to assist you in adjusting to college life, the College holds a reception for parents in the early part of each school year.

Members of the administration and faculty present the college viewpoint and inform your parents of the problems which face you in college today. Methods of coping with these difficulties by helping you develop proper study habits and self discipline are discussed.

The College seeks to achieve a measure of collaboration in working for your best interests by acquainting your parents with various aspects of academic life.

PARENTS' DAY

PUBLICATIONS

The official College newspaper is the *Spotlight,* published at regular intervals throughout the College year. The *Spotlight* uses student and faculty talent in editing, writing, photography, and technical production. Staff positions are open to freshmen and sophomore students.

Montage is the College yearbook which provides a pictorial history of the school year with a focus on the graduating class. Practical experience in management, writing, and editorial work is available to freshmen and sophomore students through staff membership.

The *Student Handbook* is published annually by the Publications Department in cooperation with the Student Government. It is distributed to all students and faculty at the beginning of each College year. It is the College guide and directory. It will keep you up to date on Academic Regulations and Student Services.

STUDENT CONDUCT

On admission to the College you accept an unqualified commitment to conduct yourself at all times, both on and off the campus, in a responsible manner conforming with generally accepted standards of adult behavior. It is expected that as a student of the College you will show common courtesy and respect for College officials, faculty, and employees. You are expected to understand and accept College regulations and to respect the directives of those authorized to enforce regulations. If you conduct yourself in a manner contrary to the best interest of the College, you will be subject to penalties as the circumstances justify, including suspension or expulsion.

HOUSING

Attractive dormitory facilities supervised by a housemother are provided at the Lycoming Hotel for all women students. The College does not provide dormitories for men. However, as an aid to students seeking living quarters, the College publishes a list of available accommodations. The College does not sponsor, approve or disapprove the listed living quarters. Students under the age of twenty-one are not permitted to live in apartments. Change of residence during a semester must be approved by the Head of Student Affairs.

HEALTH SERVICE

A dispensary, staffed by a registered nurse, is available to students during school hours. Services available are: first aid for minor accidents and illnesses, assistance in obtaining care, and health counseling.

JOB PLACEMENT

The basic purpose of our institution is to prepare you for your next station in life. Our Placement Officer will provide you with valuable assistance in your search for the next step in your career. A Career Guidance Library is available to answer your questions about various career fields.

Assistance is provided in obtaining full-time employment in the field for which you have been trained. Many companies conduct employment interviews on campus. If you plan to transfer to a four-year college, you can also gain assistance from the Placement Officer in your selection of an appropriate college.

ACADEMIC REGULATIONS

CLASSIFICATION OF STUDENTS –

REGULAR STUDENT

Full-Time: A student who is enrolled as a degree candidate or as a candidate for a certificate and carries a minimum of twelve credit hours or shop courses of sufficient length and time to allow normal progress toward completion of his program.

Part-Time: A student who is enrolled as a degree candidate or candidate for a certificate and carries less than a full-time student.

SPECIAL STUDENT

A student who carries a minimum of twelve credit hours or shop courses equal in length and time to what is required of a full-time regular student, except that he (the special student) is permitted to select courses without regard to degree or certificate requirements.

CONTINUING EDUCATION STUDENT

A student who carries less of a class load than a full-time or special student and is permitted to select courses without regard to degree or certificate requirements. The Continuing Education student may select certain courses to be transferred toward a degree or certificate program.

FRESHMAN - Regular students with fewer than 30 semester hours of credit are members of the freshman class.

SOPHOMORE - Regular students with at least 30 semester hours of credit are members of the sophomore class.

AUDITING

With the consent of the instructor concerned, a student may enroll as an auditor in a non-laboratory course. Auditors are not required to take examinations and do not receive credit for the course.

ADVANCED PLACEMENT AND CREDIT

Upon entering The Williamsport Area Community College, students who have completed advanced placement courses in high school and who pass appropriate placement examinations may be given advanced placement consideration.

A maximum of 15 credits can be acquired by such examinations. Credit will be given only with the consent of the Chairman of the Department and the Dean of the School concerned.

In all applications for advanced placement and credit, the appropriate Dean and Department Chairman will consider additional information, including the quality of the student's work in his secondary schooling. In all instances, the credit given will be in terms of courses corresponding to those courses which are part of the regular curriculum of the College.

CREDIT BY EXAMINATION – REGISTERED STUDENTS

Students who have been enrolled at The Williamsport Area Community College for at least one semester may earn credit by examination and receive a grade. Application for such examination is made through the respective Dean's office. Approval must then be given by the Chairman of the Department concerned and the Dean of the School. If approval has been received, a fee of $25.00 must be paid at the business office for each examination. The examination is to be taken at a time set by the Chairman of the Department. Presentation of the $25.00 receipt is the Chairman's permission to administer the examination. Such examination may not be given to overcome a D or an F grade.

A maximum of 15 credits may be earned by examination in addition to the 15-credit maximum under Advanced Placement and Credit.

A passing grade on a special examination will be recorded on the permanent record and will be used in determining the cumulative grade-point average. A grade of F will not be recorded on the permanent record. The faculty is not expected to assist any student preparing for an examination.

CREDIT AND CREDIT LOAD

The academic year is divided into two semesters of approximately 16 weeks each. The normal load per semester is 15 to 18 semester hours. A semester hour is, generally, equivalent to one hour per week of lecture or three hours per week of laboratory work. Students should allow an average of two hours of preparation for each semester hour of course work.

A student may not enroll for more than 18 semester hours without special permission from the Dean of his respective School.

WAIVER OF REQUIREMENTS

Under special circumstances determined by the Dean to merit such action, a student may apply for a waiver of courses usually required in a given program. Requests for waivers must be approved by the Dean and electives must be substituted for credit hours waived under this provision.

CHANGE OF PROGRAM

A student contemplating a change of program should initiate the change by conferring with his faculty advisor and his Department Chairman.

DROPPING A COURSE

A student may drop a course any time before the last two weeks of a semester by completing an official "Change of Roster" form. A course dropped before the end of six weeks is recorded with a W grade. No credit is given for a W grade. A course dropped after the end of six weeks is a recorded grade of WF. A grade of WF affects a student's grade point average in the same manner as an F. A course dropped after six weeks may be recorded as a W only upon recommendation of the instructor and the dean.

ADDING A COURSE

Except with permission of the Dean and the Instructor, no course may be added after five days of school. However, a change may be initiated by an instructor to reassign a misplaced student whenever it is expedient.

GRADING SYSTEM

The College uses the following system of grading (4.00 basis) to indicate on its records the quality of a student's work:

Grade	Significance	Grade Points
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Failing Work	0
W	Official withdrawal before the end of six weeks	
WF	Withdrawal with failure	
I	Incomplete (Student must arrange with instructor to complete work before the end of the next semester)	

A grade reported as INCOMPLETE at the end of a semester will be permanently recorded as an F if the incomplete is not removed within the following semester.

A student's grade-point average is computed by dividing the number of his grade points by the total number of hours for which he has earned a grade of A,B,C,D, or F.

A grade-point average of 2.00 will be required for graduation with an Associate Degree granted by the School of Liberal Arts and Sciences or by the School of Applied Arts and Sciences.

The College will notify by mail the parents of all full-time students who are receiving D or F in any subject at mid-semester. Students who receive such grades must immediately consult their instructors as to how they may improve the quality of their work.

SCHOLASTIC REQUIREMENTS

Any degree candidate whose cumulative grade-point average is below 2.00 will be placed on academic probation. A student on probation will be required to report to the dean of his respective school for special counseling before being allowed to register for classes the following semester. After interviews with the dean, adjustment will be made in his academic load and he will be expected to achieve a grade-point average of 2.00 or above for the succeeding semester. A student may be dropped from the College unless he accumulates a grade-point average as follows:

Beginning of	Cumulative Grade-Point Average
Second Semester	1.50
Third Semester	1.80
Fourth Semester	1.90

Students are encouraged to seek consultation on academic matters with the deans of the respective schools.

It is the prerogative of the deans of the schools to drop a student from the College at any time or to place a student on warning for one semester or longer.

GRADE REPORTS

Reports of unsatisfactory academic progress will be mailed to all student's parents at the end of the first eight weeks of every semester. Final semester grades will be mailed within one week after the end of the semester or the summer session.

REPEATING A COURSE

A student may repeat a course in which he has received a grade of F or D. Both grades received will appear on the student's permanent record and will be used in figuring his cumulative grade-point average. All grades earned by a student will be used in determining his cumulative grade-point average.

If a student repeats a course in which he has received a grade of F or D and then earns a second F or D in the same course, the second grade and credits will not be used in calculating his cumulative grade-point average. He will not be permitted to take the course a third time.

TERMINATION OF ENROLLMENT

A student may be suspended or dismissed for poor conduct or failing to comply with College regulations.

TRANSFER WITHIN THE COLLEGE

When a student transfers from one School within the College to another or from one program within the College to another, an evaluation of credits previously earned must be made by the Dean.

Credits (or hours) *only* will be accepted in the new program. The cumulative grade-point average will reflect only grades and credits earned in the new program. A student must be enrolled his last semester in College in the School or program from which he expects to be graduated. For example, if he is enrolled in a degree program his last semester, he cannot receive a diploma from a certificate program because of failure or lack of required subjects in a degree program.

THE DEAN'S HONOR LIST

The honor list for each School is announced by the Dean of the respective School at the completion of each semester. This list will include only those students carrying twelve credit hours or more who have a grade-point average of 3.30 or better.

ATTENDANCE REGULATIONS

Regular and prompt attendance at all classes and at scheduled conferences with instructors is expected of all students. All work missed by reason of absence, regardless of the cause, must be made up to the satisfaction of the instructor. A student who knows that he will be absent is expected to get assignments from his instructors in advance so that the necessary work will be completed before he leaves or immediately upon his return. This applies to absences for college activity trips as well as absences for other reasons. In all cases of anticipated absence, the student should confer with his instructor in advance whenever possible.

Students are expected to be in the classroom or laboratory at the scheduled hour. Habitual tardiness may be considered cause for dismissal from the class.

WITHDRAWAL FROM COLLEGE

If a student finds it necessary to withdraw from the College, he should report to the Dean of his respective School and complete the necessary forms in order to make the withdrawal official. If a student leaves without withdrawing officially, he will be given the grade of WF in all subjects.

WITHDRAWAL BY REQUEST

The student who continues to be habitually absent from class without good reason will be asked to withdraw from the class by the Dean of his School if, in the opinion of the instructor, further participation in the class seems to be of little value to the student and detrimental to the best interests of the class. Poor work because of lack of effort and interest shall be just cause for withdrawal by request from the College.

Students who are found to be under the influence of, or in possession of, alcoholic beverages may be dismissed from the College.

In all cases where academic dishonesty is established, the student will be dropped from the course with a grade of F. For a second offense, he may be dismissed from the College. In a case involving a

question of academic dishonesty, the professor in whose class the alleged incident is to have occurred will consult with the Dean regarding appropriate disciplinary action.

HONORABLE DISMISSAL

No student will receive an honorable dismissal, or be entitled to a transfer of credits earned, who has not satisfactorily accounted for all College property issued to him and settled all outstanding obligations. A student who fails to obtain an honorable dismissal will not be recommended to another school.

FINAL EXAMINATION

Final examinations are scheduled at designated times at the end of each semester. The schedule normally provides for an examination period for each course. A student who is absent from a final examination without good reason is subject to a failing grade.

GRADUATION REQUIREMENTS

1. The successful completion of a prescribed two-year program of study at The Williamsport Area Community College leads to an Associate of Arts degree or an Associate of Science degree from the School of Liberal Arts and Sciences or an Associate in Applied Arts degree or an Associate in Applied Science degree from the School of Applied Arts and Sciences.

To be eligible for a degree from The Williamsport Area Community College, the student is expected to satisfy the following:

a. Complete a minimum of sixty (60) semester hours (in addition to physical education) no less than thirty (30) of which must have been earned at The Williamsport Area Community College. The fourth semester must have been completed at the College.
b. Earn at least a C average (2.00 grade-point average)
c. Satisfy health and physical education requirements
d. Fulfill all financial obligations to the College

2. Certificates will be awarded for the satisfactory completion of certain courses or the satisfactory completion of a series of courses designed for a specific purpose.

COMMENCEMENT AWARDS

President's Award for Leadership and Service to the College Community

Trustees' Award to a Male Student for Achievement Under Adverse Conditions

Trustees' Award to a Female Student for Achievement Under Adverse Conditions

Deans' Award for Scholastic Achievement in the School of Liberal Arts and Sciences

Deans' Award for Scholastic Achievement in Academic Subjects in the School of Applied Arts and Sciences

Alcan Cable Award for Scholastic Achievement in Engineering Sciences

Avco Award for Scholastic Achievement in Humanities and Social Studies

Darling Valve Award for Scholastic Achievement in Applied Arts and Sciences

M.W. Kellogg Award for Scholastic Achievement in Applied Arts and Sciences

Vidmar Award for Scholastic Achievement in Mathematics

Anonymous Award for Effectiveness in Written and Oral English

Liberal Arts and Sciences Mathematics Department Award to the Most Outstanding Student in Mathematics

Lewis H. Bardo Memorial Award to a student who exemplifies the ideals of Lewis H. Bardo

Howard Award for Scholastic Achievement in Forestry

Top Award Winner: *The family of Robert N. Weller had plenty of reasons to be proud as he received two awards at the College commencement. Mr. Weller's wife, Beverly, was instrumental in the 28-year-old man's decision to get a higher education. He and his family, Wendi, six, Terrie, four, and Nikki, two, have moved to Ithaca, N.Y., where Weller is working toward a degree in veterinary medicine at Cornell University.*

GRADUATION ISN'T THE END –
IT'S COMMENCEMENT

Our Graduates Return –

To keep in touch with our Placement Officer for job opportunities!

tell us about their exciting new jobs as executive secretaries!

To visit a favorite instructor
and introduce us to a future member of the Class of '86!

CALENDAR 1968–69

Fall Semester 1968

September 5-6	Thursday-Friday	Liberal Arts Pre-registration-Freshmen
September 9-10	Monday-Tuesday	Registration
September 11	Wednesday	Continuing Education Registration
September 11	Wednesday	Orientation
September 12	Thursday	First Semester begins
October 11-13	Friday-Sunday	Fall Weekend
October 19	Saturday	Parents' Day
November 11	Monday	Mid-Semester grades
Nov. 27 - Dec. 3	Wednesday-Tuesday	Thanksgiving Recess
December 20	Friday	Christmas Recess begins at close of classes
January 6	Monday	Christmas Recess ends-classes begin
January 20-24	Monday-Friday	Final examinations

Spring Semester 1969

January 29	Wednesday	New Students Orientation
January 30-31	Thursday-Friday	Registration
February 3	Monday	Continuing Education Registration
February 4	Tuesday	Second Semester begins
March 11	Tuesday	Open House
April 1	Tuesday	Mid-Semester grades
April 3-7	Thursday-Monday	Easter Recess
May 16-18	Friday-Sunday	Spring Weekend
May 26-29	Monday-Thursday	Final examinations
June 7	Saturday	Commencement

Summer Session 1969

June 16	Monday	Registration
June 17	Tuesday	Summer School begins
June 21	Saturday	Classes in session
July 4	Friday	Vacation
July 12	Saturday	Classes in session
August 7-8	Thursday-Friday	Final examinations

CALENDAR 1969–70

Fall Semester 1969

September 4-5	Thursday-Friday	Liberal Arts Pre-registration-Freshmen
September 8-9	Monday-Tuesday	Registration
September 10	Wednesday	Continuing Education Registration
September 10	Wednesday	Orientation
September 11	Thursday	First Semester begins
October 10-12	Friday-Sunday	Fall Weekend (Suggested)
October 25	Saturday	Parents' Day (Suggested)
November 10	Monday	Mid-Semester grades
Nov. 26 - Dec. 2	Wednesday-Tuesday	Thanksgiving Recess
December 19	Friday	Christmas Recess begins at close of classes
January 5	Monday	Christmas Recess ends-classes begin
January 19-23	Monday-Friday	Final examinations

Spring Semester 1970

January 28	Wednesday	New Students Orientation
January 29-30	Thursday-Friday	Registration
February 2	Monday	Continuing Education-Registration
February 3	Tuesday	Second Semester begins
March 10	Tuesday	Open House
March 26-30	Thursday-Monday	Easter Recess
April 2	Thursday	Mid-Semester grades
May 15-17	Friday-Sunday	Spring Weekend
May 26-29	Tuesday-Friday	Final examinations
June 6	Saturday	Commencement

Summer Session 1970

June 15	Monday	Registration
June 16	Tuesday	Summer School begins
June 20	Saturday	Classes in session
August 6-7	Thursday-Friday	Final examinations

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INDEX

Academic Deans 22, 60, 214
Academic Regulations 247-252
Accounting
  Career Program - Associate Degree 100
Accreditation 2
Activities, Student 235-239
Adding a Course 249
Administrative Divisions 266
Admissions 222-225
Admissions Policy 224
Admissions Procedures 224
Admission Requirements
  School of Liberal Arts and Sciences 19
  School of Applied Arts and Sciences 57
  School of Continuing Education 213
Adult Education 213-219
Advanced Placement and Credit 247
Alumni 255
Application Request 224
Applied Arts and Sciences, School of 57-211
  Index - Programs and Course Descriptions 70, 71
Architectural Technology
  Career Program - Associate Degree 114
Architectural Club 236
Art 37
Associate Degree Requirements 252
Athletics 239
  Intercollegiate Sports 239
  Intramurals 239
Attendance Regulations 251
Audio Visual Services 266
Auditing Courses 247
Auto Body Repairman
  Career Program - Certificate 76
Automotive Department
  Programs 73-79
  Course Descriptions 80-83
Automotive Mechanics
  Career Program - Certificate 77
Automotive Technology
  Career Program - Associate Degree 74
Aviation Department
  Program 84, 85
  Course Descriptions 86
Aviation Mechanics
  Career Program - Certificate 85

Bench Carpentry
Career Program - Certificate 90
Biology 38
Board of Trustees 267
Bookstore 228
Books, Tools, and Special Clothing 228
Bowling Club 236
Broadcasting
Career Program - Associate Degree 163
Building Construction Department
Programs 87-93
Course Descriptions 94-98
Bursar 266
Business Administration
College Transfer Program - Associate Degree 35
Business Administration Department
Programs 99-103
Course Descriptions 104-106
Business Computer Science Technology
Career Program - Associate Degree 109
Business Management
Career Program - Associate Degree 101

Calendar 256, 257
Career Advice 5-9
Career Programs 57-211
Index 70, 71
Carpentry
Career Program - Certificate 91
Carpentry and Building Construction Technology
Career Program - Associate Degree 88
Certificate Programs
Index 71
Certificate Requirements 252
Change of Program 248
Cheerleading 239
Chemistry 39, 40
Circle K Club 236
Civil Engineering Technology
Career Program - Associate Degree 115
Classification of Students
Regular Student 247
Special Student 247
Continuing Education Student 247
Clerk-Typist
Career Program - Certificate 103

Clubs and Organizations 235, 236
College Administration 266
College Colors and Nickname 239
College Directory 258-267
College Organization 11, 12
College Skills Program 54, 55
College Transfer Programs 19-52
Index 25
Commencement Awards 253
Community Services 217
Computer Science Club 236
Computer Science Department
Programs 107-109
Course Descriptions 110-112
Contents 3
Continuing Education, School of
Course Offerings 218, 219
Counseling and Guidance
Academic 225
Admissions 225
Personal 225
Vocational 225
Course Credit and Degrees
College Transfer Programs 21
Course Numbering Systems
School of Liberal Arts and Sciences 36
School of Applied Arts and Sciences 72
Credit and Credit Load 248
Credit By Examination 248

Dean of Applied Arts and Sciences 60
Dean of Continuing Education 215
Dean of Liberal Arts and Sciences 22
Dean of Student Services 221
Dean's Honor List 251
Degrees
School of Applied Arts and Sciences
Associate Degree 69
Certificate 69
School of Liberal Arts and Sciences
Associate Degree 21
Diesel Mechanics
Career Program - Certificate 78
Diesel Technology
Career Program - Associate Degree 75
Dismissal, Honorable 252

Drafting Department
Programs ... 113-120
Course Descriptions ... 121-127
Drama Club ... 236
Dropping a Course ... 249

Economics ... 40
(School of Liberal Arts and Sciences)
Economics Department Course Descriptions ... 128
(School of Applied Arts and Sciences)
Education-Social Work
College Transfer Program - Associate Degree ... 33
Electrical Construction
Career Program - Certificate ... 132
Electrical Department
Programs ... 129-132
Course Descriptions ... 133-136
Electrical Instrumentation Technology
Career Program - Associate Degree ... 138
Electrical Technology
Career Program - Associate Degree ... 130
Electric Motor Rewinding and Repairing
Career Program - Certificate ... 131
Electronics Department
Programs ... 137-139
Course Descriptions ... 140-142
Electronics Technology
Career Program - Associate Degree ... 139
Employment
Part-Time ... 233
Placement ... 245
Engineering
College Transfer Program - Associate Degree ... 31
Engineering Computer Science Technology
Career Program - Associate Degree ... 108
Engineering Drafting Technology
Career Program - Associate Degree ... 116
English Department Course Descriptions ... 143
(School of Applied Arts and Sciences)
English and Speech ... 42
(School of Liberal Arts and Sciences)
Evening Sessions ... 213-219

Facilities ... 13-15
Faculty
School of Liberal Arts and Sciences ... 258-260
School of Applied Arts and Sciences ... 260-265

Fall Weekend ... 239
Final Examinations ... 252
Financial Aid ... 230
Food Service Technology Department
Program ... 144, 145
Course Descriptions ... 146, 147
Food Service Technology
Career Program - Associate Degree ... 145
Forestry Department
Program ... 148, 149
Course Descriptions ... 150, 151
Forest Technology
Career Program - Associate Degree ... 149
French ... 43
Freshman Orientation Program ... 235

Gamma Epsilon Tau Club (Printing) ... 236
General Admissions Policy ... 224
Geography ... 43
Geology ... 44
German ... 45
Glee Club ... 236
Government ... 45
Government, Student ... 235
Grade Reports ... 250
Grading System ... 249
Graduation Requirements ... 252
Graphic Arts Management
Career Program - Associate Degree ... 194

Health Occupations Department
Programs ... 152-154
Course Descriptions ... 155, 156
Health Services ... 245
Heavy Construction Equipment, Service & Operation of
Career Program - Certificate ... 79
History ... 46
Honorable Dismissal ... 252
Housing ... 244

Index
General ... 268-272
School of Liberal Arts and Sciences ... 25
School of Applied Arts and Sciences ... 70, 71

Industrial Management
Career Program - Associate Degree. 158
Industrial Management Department
Program 157-159
Course Descriptions 159-161
Intercollegiate Sports 239
International Relations Club 236
Intramurals 239

Job Placement 245
Journalism
Career Program - Associate Degree. 164
Journalism & Broadcasting Department
Programs 162-164
Course Descriptions 165-167

Liberal Arts and Sciences, School of
Programs and Course Description Index 25
Liberal Studies
College Transfer Program - Associate of Arts Degree 27
Library 14, 246
Library Assistant
Career Program - Associate Degree 169
Library Science Department
Program 168, 169
Course Descriptions 170, 171
Loans. 232

Machine Shop Department
Program 172-174
Course Descriptions. 175, 176
Machinist-General
Career Program - Certificate 174
Mathematics Department Course Descriptions 177, 178
(School of Applied Arts and Sciences)
Mathematics-Science
College Transfer Program - Associate of Science Degree. 29
Mechanical Drafting
Career Program - Certificate 119
Mechanical Engineering Club. 236
Mechanical Illustration
Career Program - Certificate 120
Montage (Year Book) 244
Music 48

Office Machine Repair Department
Program 179-181
Course Descriptions. 182-184
Office Machine Technology
Career Program - Associate Degree 180
Office Machine Repairman
Career Program - Certificate 181
Organization, College 11, 12
Orientation 235
Outing Club 236

Parents' Day 242, 243
Part-Time Employment 233
Patternmaking Department
Program 185, 186
Course Descriptions 187
Patternmaking-Wood
Career Program - Certificate 186
Phi Beta Lambda Club (Business) 236
Philosophy 49
Physics 50
Physical Education Department
Courses for Men 49
Courses for Women 50
Plumbing Department
Program 188-192
Course Descriptions 191, 192
Plumbing and Heating Technology
Career Program - Associate Degree 189
Plumbing and Heating
Career Program - Certificate 190
Practical Nursing
Career Program - Certificate 153
Printing
Career Program - Certificate 195
Printing Department
Programs 193-195
Course Descriptions 196-198
Psychology 51
Publications 244

Refunds 228
Registration 225
Registration Fee 227
Repeating a Course 250
Room and Board 228-230

Scholarships 231, 232
Scholastic Requirements 250

Science Department Course Descriptions 199
(School of Applied Arts and Sciences)
School of Applied Arts and Sciences 57-211
School of Continuing Education 213-219
School of Liberal Arts and Sciences 19-55
Secretarial Science
Career Program - Associate Degree. 102
Service & Operation of Heavy Construction Equipment
Career Program - Certificate 79
Sheet Metal
Career Program - Certificate 201
Sheet Metal Department
Program 201
Course Descriptions 202
Sign Painting
Career Program - Certificate 204
Sign Painting Department
Program 204
Course Descriptions 205
Social Events 239
Social Security and Educational Assistance 233
Sociology 51
Spanish 52
Special Events 240, 241
Sponsor School Districts 226
Spring Weekend 239
Student Affairs 235-239
Student Aid 230-233
Student Conduct 244
Student Government 235
Student Handbook 244
Student Organizations and Activities 235-239
Student Publications 244
Student Services 221-245
Summer Sessions 218

Technical Illustration
Career Program - Associate Degree 118
Termination of Enrollment 250
The Dean's Honor List 251
Tile Setting
Career Program - Certificate 92
Tool Design Technology
Career Program - Associate Degree 117
Toolmaking Technology
Career Program - Associate Degree 173
Transfer of Credit 224, 225
Transfer Procedures 21, 224
Transfer Student 224
Transfer Within the College 250, 251
Tuition Deposit 227
Tuition and Fees 227, 228

Veterans' Educational Assistance 232
Vocational Diagnostic Program 225
Vocational Rehabilitation Assistance 233

Waiver of Requirements 248
Welding
Career Program - Certificate 208
Welding Department
Programs 207, 208
Course Descriptions 209-211
Welding Technology
Career Program - Associate Degree 207
Withdrawals and Refunds 228
Withdrawal from College 251
Women's Student Organization 235, 236
Woodworking Technology
Career Program - Associate Degree 89
Woodworking Machine Operator
Career Program - Certificate 93
Work-Study Program 233

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GRIT - September 3, 1967

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EDITED BY *WACC OFFICE OF PUBLICATIONS*
DESIGNED BY *WACC OFFICE OF PUBLICATIONS*
TYPOGRAPHIC COMPOSITION BY *WACC PRINTING DEPARTMENT*
PRINTING BY *WACC PRINTING DEPARTMENT*
BINDING BY *GRIT PUBLISHING COMPANY*